VOLUME-8, ISSUE-10, OCTOBER-2019 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Cardiology

PATTERN OF DYSLIPIDAEMIA IN PATIENT WITH ANGIOGRAPHICALLY DOCUMENTED CORONARY ARTERY DISEASE

Md. Shahimur Parvez* — Dr. Md. Shahimur Parvez, Assistant Professor, Department Of Cardiology, Enam Medical College & Hospital, Savar, Dhaka, Bangladesh. E Mail: dr.parvez.dmc@gmail.com * Corresponding Author

Mohammad Arifur Rahman — Mohammad Arifur Rahman, Consultant Cardiology, Sheikh Fazilatunnesa Mujib Memorial Kpj Specialized Hospital, Tetuibari, Gazipur, Dhaka, Bangladesh

Md. Moniruzzaman — Md. Moniruzzaman, Associate Professor & Consultant Cardiology, Sheikh Fazilatunnesa Mujib Memorial Kpj Specialized Hospital, Tetuibari, Gazipur, Dhaka, Bangladesh

Arifin Islam Lita — Arifin Islam Lita, Resident Medical Officer, Department Of Medicine, Holy Family Red Crescent Medical College & Hospital, Eskaton, Dhaka, Bangladesh.

Tamal Peter Ghosh — Tamal Peter Ghosh, Registrar, Department Of Cardiology, Enam Medical College & Hospital, Savar, Dhaka, Bangladesh.

Abdul Wadud Chowdhury — Abdul Wadud Chowdhury, Professor & Head, Department Of Cardiology, Dhaka Medical College Hospital, Dhaka, Bangladesh.

ABSTRACT

Background: *Dyslipidaemia contributes to substantial increased risk of premature extensive and accelerated atherosclerosis leading to CAD, PVD and MI etc. Patients derive most benefit from treatment with lipid-lowering agents.*

Objective: *To evaluate the pattern of dyslipidaemia in patients with angiogram documented significant coronary artery disease (lesion ≥ 70 % stenosis).*

Methods: *This cross sectional analytical study was carried out in the Department of Cardiology, Dhaka Medical College Hospital, Dhaka; University Cardiac Centre (UCC), Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka and Department of Cardiology, Ibrahim Cardiac Hospital & Research Institute, Shahbag, Dhaka (March 2011 to August 2011). A total number of 50 patients with angiogram documented coronary artery disease were included in this study. Stenosis ≥ 70% in any of the three major epicardial vessels was considered significant CAD. Total Cholesterol ≥200 mg/dl or LDLc ≥130 mg/dl or HDLc ≤40 mg/dl or Triglyceride ≥200 mg/dl were considered as dyslipidaemia. Considering the inclusion & exclusion criteria the study population were divided into two groups. Group-I: Patients with dyslipidaemia (n=43) and Group-II: Patients without dyslipidaemia (n=07).*

Results: *Almost one third (32.0%) of the patients were in 6th decade and male to female ratio was 5.3:1. Eighty percent of the patients had typical chest pain and 16.0% had shortness of breath. Regarding the traditional risk factors, dyslipidaemia (86.0%) was more common followed by hypertension (66.0%), diabetes (42.0%), smoking (40.0%) and family history of IHD (28.0%). Mean BMI of the Group-I was 25.46±3.69 and Group-II was 24.65 ± 4.21. Left main involvement was found in 4.0% and most of the patients (60.0%) had significant proximal lesion involvement that were 40.0% in LAD, 18.0% in LCX and 22.0% in RCA. The mean difference of fasting lipid profile was not statistically significant between smoker and non-smoker patients, hypertensive and normotensive, diabetic and non-diabetic patients with angiogram documented coronary artery disease (P>0.05).*

Conclusion: *Most of the patients with coronary artery disease had low HDL (84.0%) irrespective of taking lipid lowering medication.*

KEYWORDS : Dyslipidaemia, Coronary Angiography, Coronary Artery Disease

INTRODUCTION

Atherosclerotic disease is projected to become the leading cause of global morbidity and mortality by 2020[1]; this trend has grave implications for countries in South Asia[2]. Rates of coronary artery disease (CAD) are higher in South Asians who have migrated and some studies suggest that rates of disease in the Indian subcontinent parallel those in the industrialized world[3,4]. CVD accounting for 32% of all death in 2000[5]. Located in South Asia, Bangladesh has a population of 160 million. In 1975, the incidence of IHD in Bangladesh was reported to be 3.3 per thousand[6] and it was 14 per thousand in 1985[7]. So surveys in Bangladesh indicate very high prevalence rates of cardiovascular disease and prevalence of IHD has progressively increased in Bangladesh during the last decade of twentieth century, particularly among the urban population.

This calls for aggressive preventive strategies. However, setting goals for preventive initiatives necessitates the definition of the risk factor profile of a population but, for the Bangladeshi population, absence of relevant data makes this difficult. The traditional risk factors namely Hypertension (HTN), Diabetes Mellitus (DM), Hypertriglyceridaemia (High) TG, low level of High density Lipoprotein (LDL-C), Smoking, low levels of antioxidants (vitamin A, E, beta carotene), rising affluence, rapid modernization associated with sedentary but stressful life style in summation are suggested as additional risk factors for IHD.

All aspects of cholesterol are important - HDL, LDL and triglycerides - so therefore; all aspects of it should be treated and managed properly. The reason having low HDL is dangerous is because of the protective function it performs. HDL cleans the walls of blood vessels, removing excess cholesterol, which would have been used to make plaque,

causing coronary artery disease. HDL then brings the excess cholesterol to liver, where it is processed and removed. Having low HDL cholesterol increases risk of coronary artery disease, regardless of good LDL and triglycerides level. And sadly, HDL cholesterol is something people overlook when managing their cholesterol.

Epidemiologic studies have shown a strong inverse association between HDL-C and CV events[8, 9]. Low HDL-C is becoming increasingly common in South East Asian populations, most likely due to the increasing prevalence of Type II diabetes and metabolic syndrome[10].

MATERIALS AND METHODS

This cross sectional study was done among the patients of Department of Cardiology, Dhaka Medical College Hospital, Dhaka, University Cardiac Centre (UCC), Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka and Department of Cardiology, Ibrahim Cardiac Hospital & Research Institute, Shahbag, Dhaka. Patient undergoing CAG and those who fulfilled the selection criteria was taken as study population. Patient who fulfilled the following criteria for clinical indications of CAG was included. Stenosis ≥70% in any of the three major epicardial vessels was considered significant CAD. Extent of CAD was defined as significant single, two or three vessel CAD. Total Cholesterol ≥200 mg/dl or LDLc ≥130 mg/dl or HDLc ≤40 mg/dl or Triglyceride ≥200 mg/dl were considered as dyslipidaemia. Considering the inclusion & exclusion criteria the study population was divided into two groups. Group-I: Patients with dyslipidaemia (n=43) and Group-II: Patients without dyslipidaemia (n=07).

Diagnostic coronary angiography was performed via either the trans-femoral or trans-radial approach using standard techniques. Cine angiographic films were analyzed independently by two experienced operators. Significant CAD was defined as ≥70% stenosis in any of the three major epicardial coronary arteries or a left main coronary artery stenosis ≥50%. Branch vessel CAD was defined as ≥70% stenosis in a major side branch of an epicardial artery (if >2 mm in diameter). Angiograms revealing coronary artery stenosis <70% in major epicardial coronary arteries were termed as non-obstructive CAD. Extent of CAD was defined as significant single, two or three vessel CAD involvement.

Purposive sampling was done. The collected data were analyzed with the aid of computer software Statistical Package for Social Sciences version 20 (SPSS Inc., Chicago, Illinois). Quantitative data were expressed as mean ± SD and Student's "t" test was employed for analysis. Qualitative data were analyzed with 2 test. Comparison between groups were made by unpaired t-test. p value < 0.05 was considered. Data was collected through a structured case record form. Data were collected from all respondent by direct face- to- face interviews. Informed written consent was obtained from all participants.

A proforma was designed to record patient demographics including cardiac risk factors, ischaemic ECG changes, values of cardiac troponin I levels and the different coronary artery segments for stenosis documentation.

Results:

Table-1: Baseline characteristics of patients according to the cardiac troponin I level status. (n=50)

Variables			p value
Age	59.40 ± 9.81	59.30 ± 12.18	0.968[ns]
30-44	03 (2.8%)	16 (13.4%)	
45-59	54 (48.6%)	40 (33.6%)	
60-74	50 (45.0%)	56 (47.1%)	
75-89	04 (3.6%)	07 (5.9%)	
	Gender		
Male	82 (73.9%)	87 (73.1%)	0.621[ns]
Female	29 (26.1%)	32 (26.9%)	
BMI	25.07 ± 3.55	24.65 ± 4.21	0.417[ns]
	Cardiac Risk Factors		
Diabetes mellitus	55 (49.5%)	60 (50.4%)	0.595[ns]
Hypertension	76 (68.4%)	84 (70.5%)	0.235[ns]
Cigarette smoking	27 (24.3%)	37 (31.0%)	0.784[ns]
Positive F/H of CAD	25 (22.5%)	26 (21.8%)	0.690[ns]
Dyslipidaemia	78 (70.2%)	69 (57.9%)	0.294[ns]
ECG ischemic abnormality	74 (66.6%)	75 (63.0%)	0.235[ns]

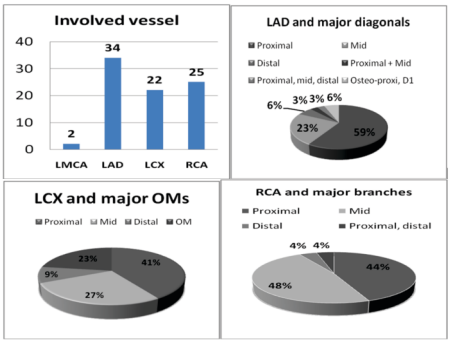

Figure 1: Coronary Angiographic profile among the study population (n=50)

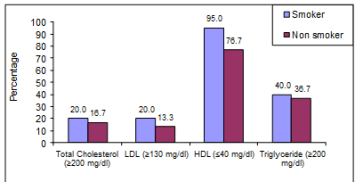

Figure 2: Bar diagram showing the association between smoking and fasting lipid profile in study patients (n=50).

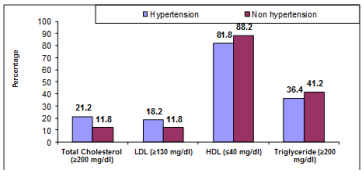

Figure 3: Bar diagram showing the association between hypertension and fasting lipid profile in study patients (n=50)

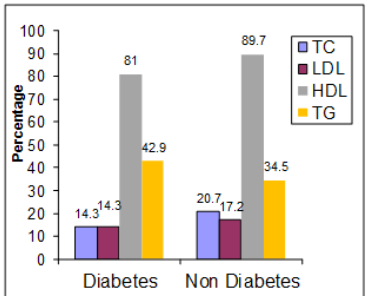

Figure 4: Bar diagram showing the association between diabetes and fasting lipid profile in study patients (n=50)

DISCUSSION:

This cross sectional study was carried out with an aim to evaluate the pattern of dyslipidaemia in patients with angiogram documented coronary artery disease and to determine the relative importance of different components of cholesterol in patients with coronary artery disease.

The present study observed the mean age was 55.84±10.28 and 54.30±12.18 years ranging from 35 to 75 years and maximum number of the patients was found in the 6th decade. In the current study it was observed that 84.0% patients were male and 16.0% were female. Male was predominant in this study and male to female ratio was 5.3:1 in the whole study population. In this current study it was observed that eighty percent patients had typical chest pain and 16.0% had shortness of breath.

In this current study the traditional risk factors was evaluated and found that 40.0% patients were smoker, 66.0% hypertension, 42.0% diabetes, 86.0% dyslipidaemia and 28.0% had family history of IHD among the study patients. Family history of premature CAD was present in about one fifth of the whole study patients. Mean BMI was 25.46±3.69 and 24.65±4.21. As regards to the relationship between BMI>25 with coronary artery disease, a number of investigators studied and found significant relationship with coronary artery disease but in this study we did not find any correlation between BMI & extent of coronary artery disease.

Smoking is a well-known risk factor for coronary artery disease. In this present study it was observed that the mean difference of fasting lipid profile was not statistically significant (p>0.05) between smoker and non-smoker patients with angiogram documented coronary artery disease. Low HDL was found 95.0% and 76.7% in smoker and non- smoker patients respectively.

Hypertension is a very well recognized risk factor for coronary artery disease. In this study it was observed that hypertension did not significantly affect the extent of coronary artery disease among the study groups. The reason may be due to most of the patients were taking anti-hypertensive medication and their blood pressure was well controlled. In this current study it was observed that low HDL was found 81.8% and 88.2% in patients with hypertensive and normotensive patients respectively. The mean difference of fasting lipid profile between hypertensive and normotensive patients with angiogram documented coronary artery disease was not statistically significant (p>0.05).

Regarding the ECG change among the study groups it was also statistically non-significant. Even with CAG documented coronary artery disease patients, 28.0% had apparently normal ECG.

Regarding the fasting lipid profile it was observed that in this present study high TC (≥200mg/dl) level was found in 09 (18.0%), high LDL (≥130 mg/dl) in 08 (16.0%), low HDL (≤40 mg/dl) in 42 (84.0%) and high TG (≥200mg/dl) in 19 (38.0%) patients with angiogram documented coronary artery disease. Percentage of patients having high LDL & high cholesterol is low, may be due to most of patients taking lipid lowering medication. Despite taking lipid lowering medication, most of their HDL is below 40 mg/dl.

In this current series it was observed that left main involvement was found in 4.0% and most of the patients (60.0%) had significant proximal lesion involvement, which were 40.0% in LAD, 18.0% in LCX and 22.0% in RCA. This is more prevalent in Group-I patients than in Group-II patients. Statistical significance was found among the groups (**p=0.002**).

The mean difference of fasting lipid profile was not statistically significant (P>0.05) between diabetic and non-diabetic patients with angiogram documented coronary artery disease. Low HDL was found 81.0% and 89.7% in patients with DM and patients with non DM respectively.

CONCLUSION

This study was undertaken to evaluate the pattern of dyslipidaemia in patients with angiographically documented coronary artery disease. Most of the people with coronary artery disease (CAD) identified by coronary angiography had low HDL (84.0%). The percentages of other parameters of lipid profile are not as high as that of HDL. Treating the condition effectively, therefore, would have a considerable impact on the outcome of the CAD patients. A significant proportion of patients with coronary disease could benefit from interventions aimed at increasing HDL-cholesterol and reducing triglycerides.

LIMITATION OF THE STUDY

- The sample size is small.
- Patients with dyslipidaemia either getting lipid lowering medication or not has not been categorized.
- Low total cholesterol and low LDL may be due to lipid lowering medication.

REFERENCES

1. Reddy, K.S., Yusuf, S., et al., 1998. "Emerging epidemic of cardiovascular disease in developing countries". Circulation; 97: pp. 596-601.
2. Nishtar, S. Et al., 2002. "Prevention of coronary heart disease in south Asia". Lancet; 360: pp. 1015-18.
3. Yusuf, S., Reddy, S., Ounpuu, S., Anand, S., et al., 2002. "Global burden of cardiovascular diseases: Part II: variations in cardiovascular disease by specific ethnic groups and geographic regions and prevention strategies". Circulation; 104: pp. 2855-64.
4. Enas, E.A., Garg, A., Davidson, M.A., Nair, V.M., Huet, B.A., Yusuf, S., et al., 1996. "Coronary heart disease and its risk factors in first-generation immigrant Asian Indians to the United States of America". Indian Heart Journal; 48: pp. 343-53.
5. Gahaffar, A., Reddy, K.S., Singhi, M.E., et al., 2004. "Burden of non-communicable disease in South Asia". British Medical Journal; pp. 234:807.
6. Malik, A., Islam, M.N. Zafar, A., Khan, A.K., et al., 1976. "Clinical patterns of ischaemic heart disease and its association with some known risk factors". Bangladesh Heart Journal; 2: pp.1-9.
7. Amanullah, M., et al., 1994. "Intravenous thrombolytics in acute myocardial infarction". Bangladesh Heart Journal; 9: pp.1-4.
8. Gordon, T., Castelli, W.P., Hjortland, M., Kannel, W.B., Dawber, T.R., et al., 1977. "High Density Lipoprotein as a Protective Factor against Coronary Heart Disease. The Framingham Study". American Journal of Medicine; 62: pp. 707-714.
9. Jacobs, D.R., Jr, Mebane, I.L., Bangdiwala, S.I., Criqui, M.H., Tyroler, H.A., et al., 1990. "High density lipoprotein as a predictor of cardiovascular disease mortality in men and women: the follow-up study of the Lipid Research Clinics Prevalence Study". American Journal of Epidemiology; 131: pp. 32-47.
10. Tan, C., Emmanuel, S.C., Tan, B., Jacob, E., et al., 1999. "Prevalence of Diabetes and Ethnic Differences in Cardiovascular Risk Factors". Diabetes Care; 22: pp. 241–247.