

Original Article

Serum Lipid Profile in Young Adults admitted with Myocardial Infarction in the Chittagong Region

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Abstract:

Key Words :
Lipid profile,
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disease,
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young adult.

Background: Ischemic heart disease (IHD) is a common cardiac disorder and significant cause of mortality and morbidity Worldwide. Dyslipidemia plays an important role in the pathogenesis of young MI as evidenced from different studies. This present descriptive study is designed to evaluate the pattern of dyslipidemia in young patients of Chittagong region, suffering from MI.

Methods: 100 patients of young myocardial infarction diagnosed by clinical, biochemical and ECG criteria were included in the study. Fasting lipid profile was measured in the patients with age less than 40 years.

Results: Among the patients 44% patient had hypertension, 15% were diabetic, 40% patients had history of smoking and 12% patient were obese. Change of socioeconomic status found to have an influence in lipid profile like low density lipoprotein (LDL), total cholesterol (TC) and triglyceride (TG) ($p < 0.05$) but high density lipoprotein (HDL) had no change ($p > 0.05$). LDL was changed in relation with nature of works. TG was significantly found higher in rural community and advanced age group ($p < 0.05$). HDL level was found varied with gender and others were found insignificant.

Conclusion: Varied lipid profile was found among the young victims of MI in Chittagong region. It might be concluded that control of blood lipid might lower the coronary events among young patients.

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Introduction:

Ischemic heart disease is the leading cause of morbidity and mortality worldwide.¹ In the USA, approximately 650,000 patients get a new acute myocardial infarction (AMI) and 450,000 experience a recurrent myocardial infarction annually.² In the United Kingdom, coronary artery disease is responsible for 180,000 admission to hospital each year. Similar to the rest of the world, IHD is a leading cause of death in Asian countries.³ The incidence of MI is on the increase in our population. Traditionally IHD had been considered as a disease of middle and old age but in recent years MI is being recognized in younger age groups with increased frequency.⁴ AMI in persons under the age of 40 years accounts

for approximately 19% of all AMI cases.⁵ The disease seems to follow an accelerated course with ischemic event occurring a decade earlier in Asian population compared to those reported from developed world.⁶ IHD in young people constitutes an important problem for the patient and the treating physician because of the devastating nature of this disease on the more active lifestyle of young patients. Cigarette smoking is the most common and a modifiable risk factor in young patients. Obesity, family history and hyperlipidemia are also common risk factors for young MI patients⁷. A study done in India⁸ found that CAD in young people is usually due to atherosclerosis of large and medium sized arteries and dyslipidemia has been found to be one of the

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most important contributing factors. In India cardiovascular disease is the leading cause of death. The death due to CVD in India was 32% of all deaths in 2007 are expected to rise from 1.17 million in 1990 and 1.59 million in 2000 to 2.03 million in 2010.⁹ Though the exact incidence of AMI in our country is not known, one study found that the incidence of coronary artery disease in Bangladesh has increased from 3.3 per thousand to 14 per thousand from the year 1975 to 1985.¹⁰ Chittagong is the second biggest city of Bangladesh. Despite being located on the coastline of Bay of Bengal, a large section of the people here seems to have unhealthy food habits. Although no thorough study has been performed, there is a perception that the prevalence of coronary arterial diseases is higher in this part of the country. Objective of the study is to evaluate the pattern of lipid profile in the young patients of Chittagong region with myocardial infarction.

Methods:

This descriptive study was undertaken at the department of Cardiology, Chittagong Medical College Hospital between January and December 2012. Study population was patients aged below 40. 100 such patients were selected through purposive sampling. Patients duration of AMI > 24 hours and other co morbid conditions were excluded in the study. Clinical history was taken and clinical examination was done to elicit findings related to MI. Related investigations including Blood sugar, S Creatinine and complete Lipid profile were done. All investigations were done in the Biochemistry Departments of CMCH and if not possible, then in the standard laboratory of Chittagong.

Results:

100 patients were included in the study of whom 75 were male and 25 were female. 46 of them were in their third decade (aged 21-30 years) and 54 were in the fourth (aged 31-40 years). Most of the patients were from low socioeconomic status (38%). Majority of the patients were doing sedentary works (51%) and rest were doing moderate to hard works. 52% of the patients were from urban locality and rest 48% were from rural habitat. These sociodemographic pictures are representative of present socio-cultural aspect of Bangladesh.

Table I

Risk factors among the study population (N=100).

Risk factor	Frequency	Percentage
Hypertension	44	44%
Diabetes mellitus	15	15%
Smoking	40	40%
Obesity	12	12%

All the patients (100%) presented with some degree of chest pain. Other complaints were sweating (78), vomiting (35) and breathlessness (21). Table I shows the risk factors of the patients. Hypertension has the highest frequency followed by smoking, Diabetes mellitus and obesity in the descending order of distribution.

Table-II

Lipid profile of urban and rural population

Lipid	Rural	Urban
LDL	139.45±34.83	101.02±19.03
TC	234.79±65.52	184.21±36.7
TG	401.19±70.1	320.92±35.31
HDL	39.68±5.28	38.21±4.56

There was an interesting finding of the serum levels of lipids between the urban and rural population. The Mean±SD level of Total Cholesterol, LDL, HDL & TG all were higher in the rural population (Table 2), but the difference was found significant only in case of Total cholesterol. TG was significantly found higher in rural community than the urban ($p < 0.05$) and others were found insignificantly distributed. Perhaps inclusion of a bigger sample size might give more information. Table 3 shows the distribution of serum level of lipids across gender. HDL level was significantly lower and others were found insignificant.

Table-III

Lipid profile in relation to gender in study population (N=100).

Lipid	Male(n=75)	Female(n=25)	p value
LDL	119.74±33.78	96.00±8.48	0.88 ^{ns}
TC	209.35±57.99	153.50±24.74	0.44 ^{ns}
TG	361.74±76.81	227.50±67.17	0.21 ^{ns}
HDL	32.99±4.91	41.00±7.07	0.007 ^s

Discussion:

Ischemic heart disease is one of the major health problems all over the world and the coronary artery thrombosis is the leading cause of it. In the developing country like Bangladesh, urbanization is taking place at a rapid pace that is responsible for change in the lifestyle which adversely affects the metabolism thereby causing a large increase in the number of diabetic patients.¹¹

All patients in our study presented with chest pain. Other presenting complaints were sweating (78%), vomiting (35%) and breathlessness (21%). These are common presentations of acute MI just as like in other age groups. 44% of the patients had hypertension, 15% were diabetic, 40% patients had history of smoking and 12% patient were obese. The results of present study with reference to risk factors were similar to those published earlier. History of smoking, life style and family history of IHD were found as significant risk factors for young MI. All of the above findings are consistent with the earlier study.

The pattern of lipid was almost same in males and females except HDL level. In contrast to our findings of lower level of HDL concentration in males other studies have shown either a rise¹² or no change¹³ in HDL. An inverse relationship between TG and HDL has been reported and in our subjects too, this appears true. The limitations of this study include that this is a single center study, small sample size and lack of follow up.

Conclusion:

The young MI patients in Chittagong region have diverse lipid profile. Further study is needed to evaluate those risk factors in our context. A longer duration multicenter large scale study is recommended to get the actual scenario of the south-eastern coastal part of Bangladesh.

Conflict of Interest - None.**References:**

1. Kannel WB, Thom TJ. Incidence, prevalence and mortality of cardiovascular disease. In: Schiant RC,

Alexander RW. Hurst's the heart: arteries and veins. The Heart. 8th ed. New York: McGraw- Hill,1994; 185-197.

2. Braunwald E. Approach to patient with cardiovascular disease. In: Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL. *Harrison's Principles of Internal Medicine*; 16th ed. New York: McGraw-Hill,2005:1301-1494.
3. Chouhan L, Hajar HA, Pomposiello, JC. Comparison of thrombolytic therapy for acute myocardial infarction inpatients aged<35 and >55 years. *Am J Cardiol* 1993; 71: 157-159.
4. Gershlick AH, Syndercombe CD, Mills P, Young Infarct patients with single –vessel occlusion does not have an underlying prothrombotic state to explain their coronary occlusion. *Int J Cardiol* 1992; 36:49-56.
5. Ahmed J, Shafique Q. Myocardial Infarction under age 40: Risk factors and coronary angiographic findings. *Ann King Edward Med Coll* 2003; 9(4): 262-265.
6. Ayub M, Tariq W, Nadeem MA, Irshad H. Risk stratification of patients presenting with first acute myocardial infarction with serum cardiac troponin T. *Pak J Cardiol* 1999; 10: 54-62.
7. Khurshid R, Mannan B, Mahamud N, Ara R, Naveed AQ. Smoking –A risk factor for coronary disease. *Pakistan J Pathol* 2001; 12:2:19-22.
8. Krishnaswami V, Radhakrishnan T, John BV, Mathew A. Pattern of ischemic heart disease: a clinical study. *J Indian Med Asso* 1998; 55:153-157.
9. Ghaffar A, Reddy KS, Singhi M. Burden of non-communicable disease in South Asia. *Br Med J* 2004, 328: 807-810.
10. Malik A. Congenital and acquired heart disease: A survey of 7062 person. *Bangladesh Med Res Bull* 1976;11: 115-119.
11. Chowdhury MAR, Hossain AKMM. A comparative study on the effects of streptokinase between diabetic and non-diabetic myocardial infarction patients. *Bangladesh J Pharmacol* 2008; 3: 1-7.
12. Heldenburg D, Rubenstein A, LevtoV O, Berns L, Werbin B, Tamir L. Serum lipids and lipoprotein concentrations during the acute phase of myocardial infarction. *Atherosclerosis* 1980;35: 433-437.
13. Jackson RR, Scragg R, Marshall R, O'Brien KW, Small C. Changes in serum lipid concentrations during first 24, hours after myocardial infarction. *Br Med J* 1987; 294: 1588-1589.