CARDIOVASCULAR RISK FACTORS IN ACUTE MYOCARDIAL INFARCT PATIENTS WITH NORMAL LIPID PROFILE ON ADMISSION

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ABSTRACT

The present work was conducted to elucidate the newly identified risk factors associated with Acute Myocardial Infarction (AMI). The work mainly focuses on lipid peroxidation and antioxidant status along with the newly emerging risk factors in normolipidemic AMI patients. Coronary artery disease (CAD) has become a major health problem and is the most common cause of mortality and morbidity in the entire world. Evaluation of coronary risk factors associated with atherogenesis is continuing. Some patients, with no known risk factors too develop cardiovascular disease. Therefore, the role of newly identified risk factors are being studied.

Aims and Objectives: The aim of the study was to look at the independent association of novel risk factors other than known risk factors observed in AMI patients. Thus the objectives of the undertaken study were:

1. To study the risk factors seen in normolipidaemic subjects with myocardial infarction.
2. To assess the extent of lipid peroxidation and total antioxidant status in myocardial infarct subjects with normal lipid profile.

Methodology: This study included 165 normolipidaemic AMI patients (males; 123 and females; 42). Age and sex matched (males; 123 and females; 42) were the control in this study. Measurment of biochemical parameters included serum albumin by bromocresol

green dye binding kit method, uric acid by phosphotungstic acid reduction method, ascorbic acid by Roe and Kuether method, total bilirubin by Jendrassik and Grof method, lipid profile by enzymatic methods, plasma Fibrinogen by TE clot method, serum caeruloplasmin activity by p-phenylenediamine method, serum arylesterase activity by phenyl acetate hydrolysis method , ischemia-modified albumin by cobalt binding method, C-reactive protein by high sensitivity C-reactive protein enzyme immunoassay, lipoprotein (a) by latex- enhanced turbidimetric method , superoxide dismutase by 2-(4-iodophenyl)-3-(4-Nitrophenol)-5-phenyl tetrazolium chloride (I.N.T) method, glutathione peroxidase by Paglia and Valentine method, catalase by Beers and Sizer method, serum malondialdehyde by Beuge and Aust method, conjugated diene by Recknagel and Glende method. Anthropometric measurments were carried out using standard measuring instruments. The dietary antioxidants intake was measured by 7-day dietary recall method.

Results: The anthropometric values reveal significantly higher body weight ($p<0.01$), hip circumference ($p<0.01$), waist circumference ($p<0.01$), waist / hip ratio ($p<0.001$), mid arm circumference ($p<0.001$) and triceps skin fold thickness ($p<0.001$) in patients compared with controls. The serum albumin ($p<0.0001$), uric acid ($p<0.01$), ascorbic acid ($p<0.001$) and total bilirubin ($p<0.0001$) observed in AMI patients were significantly lower compared to controls. The serum total cholesterol (TC) ($p<0.0001$), total cholesterol (TC) / HDL-cholesterol ratio ($p<0.0001$), LDL-Cholesterol (LDL-C) ($p<0.0001$) observed in patients were significantly higher, where as LDL-C / HDL-C

ratio and triglyceride / HDL-C ratio levels were not significantly different in patients compared to controls. The HDL-C was significantly lower ($p<0.0001$) in MI patients compared with controls. The plasma fibrinogen ($p<0.01$) and caeruloplasmin ($p<0.0001$) levels were significantly higher, whereas serum arylesterase activity was significantly lower ($p<0.0001$) in MI patients compared to controls. The serum ischemia-modified albumin (IscMA) ($p<0.01$), C-reactive protein ($p<0.0001$), lipoprotein (a) ($p<0.0001$) concentrations in patients were significantly higher compared with controls. The serum antioxidant enzymes superoxide dismutase (SOD) ($p<0.0001$), glutathione peroxidase (GPx) ($p<0.0001$) and catalase ($p<0.0001$) activities in patients were significantly lower compared to activities observed in controls. The serum malondialdehyde (MDA) and conjugated diene (CD) concentration observed in patients were significantly higher ($p<0.0001$) than controls.

Conclusion: The study revealed that it is not only the lipid profile that needs to be monitored at regular intervals but also, one should assess other variables which might be missed or over looked, leading to future events of acute coronary syndromes and myocardial infarction. So it becomes important to evaluate the risk markers along with routine lipid profile investigation. It is also advised to increase the dietary antioxidant intake in persons who already have known risk factors so that to some extent the myocardial infarction could be delayed. The evaluation of the inflammatory markers like C-reactive proteins and Ischemia modified albumin also stands important as an indicator of ischemia due to coronary occlusion caused by thrombus and plaque, at a

regular time period after stepping on to the fourth decade of life, as they are cost-effective and efficient way to minimize the heavy cost laid in intensive coronary care unit in management and treatment of AMI. The future risk of AMI could be alleviated, and even prevented if we are alarmed at the right time.