

ESTIMATION OF BIOMARKERS IN PREDICTION OF CORONARY ARTERY DISEASE – A REPORT FROM TERTIARY CARE HOSPITAL IN SOUTH INDIA

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Sir,

Coronary artery disease (CAD) is a major contributor of morbidity & mortality worldwide. Demographic changes coupled with lifestyle modification have accelerated the number of deaths due to CAD. In the past few decades, the prevalence of CAD among Indians have increased to about 10% in urban and 5% in rural population⁽¹⁾. In view of this, efforts have to be taken to understand the role of biochemical risk factors in order to control this emerging epidemic. Hence, this study was undertaken to explore the role of various conventional risk factors like plasma levels of glucose, serum levels of total cholesterol, triglyceride (TGL), High-density lipoprotein-cholesterol (HDL-C), Low-density lipoprotein-cholesterol (LDL-C), and emerging risk factors like lipid ratios & Apo B to predict the occurrence of CAD among the Indian population.

This study was done on 339 subjects of which 213 were cases angiographically proven to have coronary artery disease. The rest 126 were healthy normotensive individuals without any known risk factors and within the same age group as the cases. Fasting blood samples were collected in NaF tubes for estimation of plasma glucose & plain vacutainer tubes for estimation of lipid profile & Apo B. The samples were analyzed in Bayer's Express Plus automated system using kits supplied by Accurex India. Serum ApoB100 was measured in BN Pro spec Nephelometer using kits, reference material and standards supplied by Dade Behring.

The mean values of the conventional risk factors namely glucose, total cholesterol, TGL, HDL-C, LDL-C and emerging risk factors like lipid ratios and Apo B were found to be high among cases than among the controls (Table 1). The difference in mean values among the cases and controls were calculated and was found to be statistically significant. Multivariate analysis of risk factors for CAD showed statistically significant higher odds ratios for total cholesterol (2.6), TGL (4.0), HDL-C (7.9), LDL-C (2.5), total cholesterol/HDL-C (3.6), LDL-C/HDL-C (3.3) and Apo B (1.7) (Table 2).

Excessive predilection to CAD may be due to clustering of various risk factors. Indians often reveal higher incidence of CAD compared to other ethnic groups⁽²⁾. The SHARE study⁽³⁾ and Seven Countries Study⁽⁴⁾ show the association

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Table 1: Risk factors for Coronary artery disease

Parameters	Normal n=126 Mean + SD	Cases n=213 Mean + SD	p Value
Glucose (F), mg/dl	94 + 9	122 + 40	<0.001
Total Cholesterol, mg/dl	175 + 31	185 + 50	<0.02
Triglycerides, mg/dl	102 + 35	162 + 96	<0.0001
HDL Cholesterol, mg/dl	40 + 8	32 + 7	<0.001
LDL Cholesterol, mg/dl	115 + 27	121 + 46	<0.05
TC/HDL Ratio	4.4	6	<0.001
LDL/HDL Ratio	2.9	3.9	<0.001
Apolipoprotein -B, mg/dl	89 + 22	96 + 25	<0.01

Table 2: Multivariate Analysis of Risk Factors for CAD

Parameters (mg/dl)	Cut Off Value	Odds Ratio	95% Confidence Interval	p Value
Total Cholesterol	> 205	2.6	1.17-6.08	<0.01*
Triglycerides	> 101	4	1.8-8.7	<.05*
HDL Cholesterol	<38	7.9	3.5-18	<0.001*
LDL Cholesterol	> 142	2.5	1.0-5.9	<.05*
TC/HDL Ratio	> 4.6	3.6	1.6-7.75	<.001*
LDL/HDL Ratio	> 3	3.3	1.5-7.0	<.0008*
Apolipoprotein-B	> 97	1.7	1.0-2.7	<.05*

* Adjusted for Age, Sex,

of conventional risk factors with CAD. Our study result also reflected similar fractures, proving that incidence of CAD is high among individuals with higher levels of conventional risk factors. PROCAM Study⁽⁵⁾ and Helsinki Heart Study⁽⁶⁾ proved that lipid ratios such as total cholesterol/HDL-C and LDL-C/HDL-C along with the serum TGL as the best predictor of cardiac events, as also documented in our study.

Levels of Apo B reflect the total circulating atherogenic particles which are missed by measuring LDL-C alone.

Hence, measurement of Apo B should be done along with the other risk factors to predict CAD at an early stage. To conclude, estimation of conventional and emerging risk factors may play a vital role for providing a rationale for secondary and tertiary prevention of CAD in Indian population.

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