

Original Article

Assessment of risk factors of premature coronary artery disease among population visiting tertiary care hospital

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ABSTRACT:

Background: Recent estimates suggest that 80 per cent of CVD deaths occur in developing countries with substantial contribution from India. The present study was conducted to assess risk factors of premature coronary artery disease in Indians. **Materials & Methods:** 120 cases of coronary artery disease of both genders were subjected to serum lipid profile, homocystine, Lipoproties (a), & PAI inhibitors, complete haemogram, Urine (Routine & Microscopy), family history, smoking, diabetes etc. **Results:** out of 120 patients, males were 70 and females were 50. 101 were diabetics, 82 were hypertensive, 75 were smokers, 70 were alcoholics, 65 were obese, 90 had dyslipidemia and 80 had positive family history. The difference was significant ($P < 0.05$). **Conclusion:** Risk factors in patients with premature coronary artery disease found to be positive family history, smoking, dyslipidemia, hypertension, obesity, alcoholism and diabetes.

Key words: Coronary artery disease, Dyslipidemia, hypertension.

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INTRODUCTION

Recent estimates suggest that 80 per cent of CVD deaths occur in developing countries with substantial contribution from India. This high burden is largely ascribed to the industrial and technological progress and the associated economic and social transformations. In India, the estimated adult prevalence of coronary heart disease (CHD) is around 8-10 per cent in urban settings and 3-4 per cent in rural areas, reflecting a rise of six-fold and two-fold respectively between 1960 and 2000. It is estimated that by 2020, CVD will be the largest cause of disability and deaths in India.¹

The prevalence of CAD has progressively increased in India during latter half of the last century particularly among the urban population. Premature CAD is defined as cardiac events occurring before the age of 45 in men and 55 in women. In its severe form, it is defined as CAD occurring below the age of 40 years. Cardiovascular disease is the leading cause of death in India accounting for 28% of mortality. Risk of CAD in Indians is 3-4 times higher than White Americans, times higher than Chinese and 20 times higher than Japanese.²

It is widely believed that the association of these risk factors with CAD in other populations needs to be ascertained, and there is speculation that differences might range from the frequency of presence of classical risk factors to their total absence or irrelevance in these populations.³ Therefore, it is

imperative to undertake large population-based, prospective studies in developing countries such as India to identify CAD risk factors, both conventional and novel.⁴ However, careful scrutiny of available scientific evidence for modifiable CAD risk factors (elevated serum total and low-density lipoprotein cholesterol [LDL-C], low high-density lipoprotein cholesterol [HDL-C], smoking, diabetes, hypertension, low level of physical activity, and obesity) in this population may be helpful in formulating a more immediate CAD prevention strategy.⁵ The present study was conducted to assess risk factors of premature coronary artery disease among the population visiting tertiary care hospital.

MATERIALS & METHODS

This cross-sectional hospital-based study was conducted collaboratively by department of general medicine, SVS Medical college, Mahabubnagar, Andhra Pradesh from January 2013 to June 2013. The present study consisted of 120 cases of coronary artery disease of both genders. All were enrolled after obtaining their written consent. Blood samples for plasma glucose, serum ALT, CRP, high-density lipoprotein cholesterol (HDL-C), and low-density lipoprotein cholesterol (LDL-C) concentration measurements were obtained by a trained clinician. For each patient, 10 mL of venous blood samples were drawn from the arm and transferred to EDTA (ethylene diaminetetraacetic acid) tube. Blood

samples were then taken to a clinical research laboratory referral hospital for further analysis procedures. Clarified serum and plasma samples were then pipetted and poured into Eppendorf storage tubes (5 mL), followed by freezing at -20°C. Blood pressure measurement was conducted by the trained clinical officer upon arrival of the patient and after resting for 10–15 minutes. sphygmomanometer was used to measure blood pressure while the patient seated and relaxed with the left hand at the level of the heart. Three systolic and diastolic blood pressure

readings were taken on the left upper arm of the patient. Average systolic and diastolic blood pressure was used in the analysis.

Data such as name, age, etc. was recorded. A thorough clinical examination was performed. Parameters such as ECG, echocardiography, serum lipid profile, complete haemogram, Urine (Routine & Microscopy), family history, smoking, diabetes etc. were determined. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 120		
Gender	Males	Females
Number	70	50

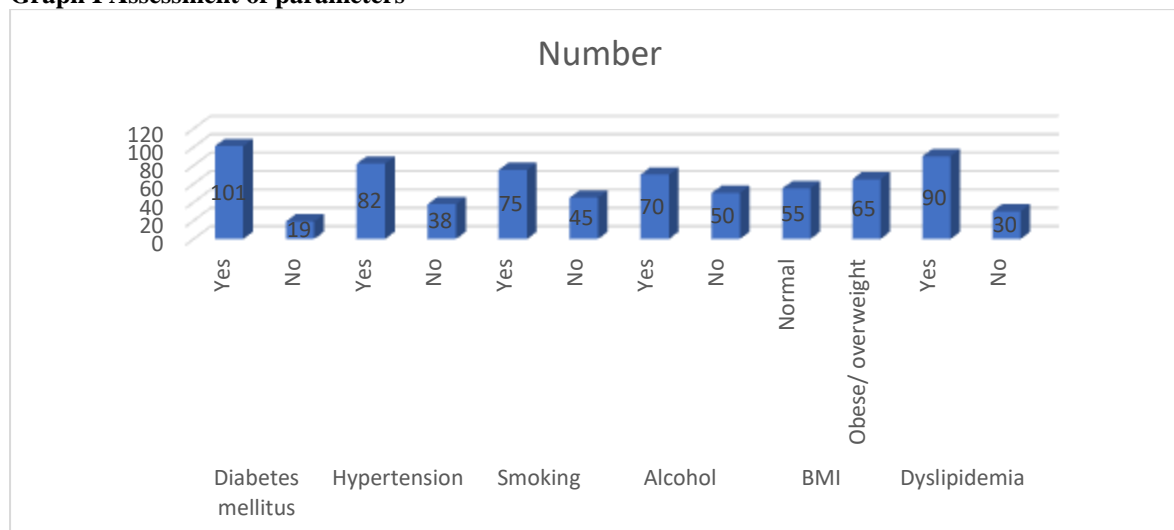
Table I shows that out of 120 patients, males were 70 and females were 50.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Diabetes mellitus	Yes	101	0.001
	No	19	
Hypertension	Yes	82	0.01
	No	38	
Smoking	Yes	75	0.05
	No	45	
Alcohol	Yes	70	0.05
	No	50	
BMI	Normal	55	0.14
	Obese/ overweight	65	
Dyslipidemia	Yes	90	0.01
	No	30	
Family history	Yes	80	0.01
	No	40	

Table II, graph I shows that 101 were diabetics, 82 were hypertensive, 75 were smokers, 70 were alcoholics, 65 were obese, 90 had dyslipidemia and 80 had positive family history. The difference was significant (P< 0.05).

Graph I Assessment of parameters



DISCUSSION

Indians are more prone as a community to CAD at a much younger age. Indians also show higher incidence of hospitalization, morbidity and mortality than other ethnic group. In the Western population, incidence of CAD in the young is up to 5 % as compared to 12-16% in Indians. In some studies from India, percentage of patients below the age of 45 years suffering from acute MI is reported as high as 25-40%.^{6,7}

Young patients from other communities do not show extensive disease whereas in young Indians there is often three vessel disease with poor prognosis. The post infarction period is also worse in Indians as compared to whites.⁸This is reflected by three times higher rate of re-infarction and two times higher rate of mortality. The prevalence of CAD is two times higher than in rural India¹⁶. South Indians have higher prevalence. The vulnerability of urban Indians to CAD is possibly related to different nutritional, environmental, and life style factors.⁹The BMI in urban Indians as compared to rural Indians is 24 vs. 20 in males and 25 vs. 20 in females. Migration from rural to urban environment and migration from India to industrialized countries is another special risk factor for our people. Migration is usually associated with stress of seeking and maintaining the new job. Risk factor evaluation must start earlier.¹⁰The present study was conducted to assess risk factors of premature coronary artery disease in Indians.

In present study, out of 120 patients, males were 70 and females were 50. Hasan et al¹¹ found that in patients with young CAD smoking was seen 29 patients (72.5%). Low HDL was found in 15 patients (37.5%), raised LDL was seen in 33 patients (82.5%),hypertension in 21 patients (52.5%), impaired fasting glucose / DM in 8 patients (20%). 27 patients (67.5%) had a positive family history of CAD. 20 patients (50%) were overweight, had BMI >30, 20 patients (50%) had STEMI. In that, 18 patients had AAMI(45%) and only 2(5%) had IWMI. 2(5%) had new onset LBBB. 11(27.5%) had NSTEMI and 7(17.5%) had Unstable angina. On echocardiography, 29 patients (72.5%) had LV dysfunction.

We found that 101 were diabetics, 82 were hypertensive, 75 were smokers, 70 were alcoholics, 65 were obese, 90 had dyslipidemia and 80 had positive family history. Panwar et al¹² assessed the relationship between atherothrombotic risk factors and premature CHD in young (<55 yr age) Indian population in this issue further explores this aspect to some extent. The authors conducted a hospital-based case-control study and collected data from 165 cases of acute coronary event and 199 controls matched in age, gender, and hospital in Bikaner, Rajasthan. One of the main findings is that both thrombotic (smoking, low fruit/vegetables intake, fibrinogen, homocysteine) and atherosclerotic (hypertension, high fat diet, dyslipidaemia) risk factors are significant in causing

premature CHD in Indian population, which re-strengthen the current evidence on CHD risk factors and should help to form prevention strategies in India to reduce CVD burden. Current smokers had a significantly higher risk of premature CHD, which strengthens the need to reduce the high smoking rates in India through tough anti-smoking policies if a growing coronary artery disease epidemic is to be averted. The study suggests that smoking, low HDLC, hypertension, low intake of vegetables and fruits, are the most important modifiable risk factors for premature CVD. Further, the findings that low intake of vegetables and fruits as an important risk factor of premature CHD could be contributing to the excess risk through the thrombotic pathway as rightly pointed out by the authors. A major limitation of this study is the lower proportion of women (7.9 % cases and 12.1 % controls), which limits generalizability.

CONCLUSION

Authors found that risk factors in patients with premature coronary artery disease found to be positive family history, smoking, dyslipidemia, hypertension, obesity, alcoholism and diabetes. These patients should be well educated on lifestyle modification, especially on healthy dietary habits and need for increased physical activity. Patients should also be well encouraged to reduce the amount of salt to the recommended levels (<5 g/day), for lowering blood pressure. This study further demonstrated the key role played by inflammatory markers Particularly CRP and ALT in determining CVDs risk.

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