# Determination of Coronary Artery Disease and Cardiovascular Risk Factors.

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## ABSTRACT

**Background:** Coronary artery disease (CAD) is one of the most common causes of mortality and morbidity. The present study was conducted to assess the cardiovascular risk factors in patients with Coronary artery disease. **Methods:** The present study was conducted on 84 patients less than 40 years old of both genders. All patients were subjected to ECG. Patients presenting with serial ECG – ST segment elevation in more than 2 contiguous leads, ST segment depression > 1 mm in 2 contiguous leads and/or T-wave inversion during chest pain, episodes or any bundle branch block (new onset LBBB or RBBB) or AV block were selected. Serum biochemistry such as serum electrolytes such as serum Na+, serum K+, lipid profile and renal function tests were performed. **Results:** ST elevation MI was seen in 22 males and 20 females, non ST elevation MI in 14 males and 13 females and unstable angina in 6 males and 9 females. Common risk factors in CAD were smoking seen in 38, obesity in 14, sedentary lifestyle in 26, hypertension in 26, positive family history of premature IHD in 14, dyslipidemia in 45 and diabetes in 12. The difference was significant (P< 0.05). **Conclusion:** Acute coronary syndromes are a major cause of concern in the present-day world particularly when it happens in a younger age group population. There is association of conventional CV risk factors, such as, dyslipidemia, hypertension, sedentary lifestyle and smoking with coronary artery disease.

*Keywords:* Acute coronary syndromes, dyslipidemia, Hypertension.

## INTRODUCTION

Coronary artery disease (CAD) is one of the most common causes of mortality and morbidity in both developed and developing countries. It is a leading cause of death in India, and its contribution to mortality is rising.[1] According to reports from the National Commission on Macroeconomics and Health, 23 million people below 40 years of age will have CAD. The prevalence of classic cardiovascular risk factors such as hypertension, dyslipidemia, obesity and diabetes, varies widely between different countries, and shows some important secular trends.[2] The conventional risk factors for CAD can be divided into nonmodifiable and modifiable risk factors. The former include age, sex and family history, while the latter include diabetes mellitus (DM), smoking, dyslipidemia, hypertension and obesity.[3]

Deaths related to CAD have been found to occur 5 to 10 years earlier in Indian sub-continent than in Western countries.4 CAD is relatively uncommon in young adults. The Framingham study reported a 10-year myocardial infarction incidence rate of 12.9 per 1000 among 30–34 years old men and 5.2 per 1000 among 35–44 years old women. Men and women aged 55–64 years had an incidence of myocardial infarction that was approximately 8- and 9-fold greater, respectively.[4] The present study was conducted to assess the cardiovascular risk factors in patients with Coronary artery disease.

## MATERIALS AND METHODS

The present study was conducted in the department of Cardiology. It comprised of 84 patients less than 40 years old of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

General information such as name, age, gender etc. was recorded in. In all patients history and clinical findings including anthropometric measurements were done. Patients were subjected to ECG. Patients presenting with serial ECG – ST segment elevation in more than 2 contiguous leads, ST segment depression > 1 mm in 2 contiguous leads and/or T-wave inversion during chest pain, episodes or any bundle branch block (new onset LBBB or RBBB) or AV block were selected.

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Patients were subjected to serum biochemistry such as serum electrolytes such as serum Na+, serum K+, lipid profile and renal function tests were performed. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

## RESULTS

**Table 1: Distribution of patients**

| Clinical Subtype | Male | Female |
|---|---|---|
| ST- elevation MI | 22 | 20 |
| Non ST-elevation MI | 14 | 13 |
| Unstable Angina | 6 | 9 |

[Table 1] shows that ST elevation MI was seen in 22 males and 20 females, non ST elevation MI in 14 males and 13 females and unstable angina in 6 males and 9 females.

**Table 2: Risk Factors in CAD**

| Risk factors | Number | P value |
|---|---|---|
| Smoking | 38 | 0.01 |
| Obesity | 14 | |
| Sedentary lifestyle | 26 | |
| Positive family history of premature IHD | 14 | |
| Hypertension | 26 | |
| Dyslipidemia | 45 | |
| Diabetes | 12 | |

[Table 2], graph I shows that common risk factors in CAD were smoking seen in 38, obesity in 14, sedentary lifestyle in 26, hypertension in 26, positive family history of premature IHD in 14, dyslipidemia in 45 and diabetes in 12. The difference was significant (P< 0.05).
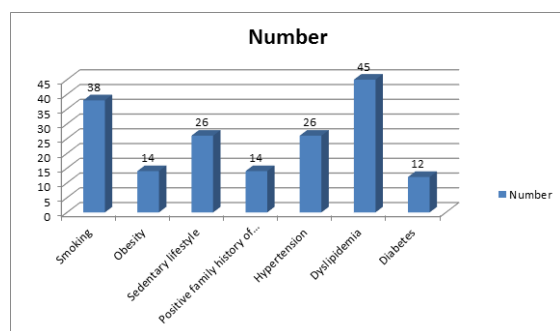


**Figure 1: Risk Factors in CAD**

**Table 3: Parameters in patients.**

| Parameters | Males (mean) | Female (mean) |
|---|---|---|
| S. Urea (mg/dl) | 36.1 | 38.3 |
| Creatinine (mg/dl) | 1.2 | 1.1 |
| S. bilirubin (mg/dl) | 1.4 | 1 |
| ALP (IU/l) | 53.7 | 57.2 |
| SGOT (units/l) | 42.6 | 48.5 |
| SGPT (units/l) | 44.8 | 46.4 |
| TSP (g/dl) | 7.8 | 7.3 |
| DSP (g/dl) | 5.4 | 4.1 |

[Table 3] shows that mean blood urea (mg/dl) in males was 36.1 and in females was 38.3, creatinine (mg/dl) in males was 1.2 and in females was 1.1, mean SGOT (units/l) in males was 42.6 and in females was 48.5, mean SGPT (units/l) in males was 44.8 and in females was 46.4, mean ALP (IU/l) in males was 53.7 and in females was 57.2, mean s. bilirubin (mg/dl) in males was 1.4 and in females was 1, mean TSP (g/dl) in males was 7.8 and in females was 7.3, mean DSP (g/dl) in males was 5.4 and in females was 4.1.

## DISCUSSION

Indian populations have been observed to have a more severe CAD that has its onset at younger age with male predominance. Although a number of risk factors have been identified over the past several decades, the precise etiology and mechanisms leading to the development of CAD are not fully understood. Few studies have been done recently to identify the temporal trends in the metabolic and demographic profile of CAD in young patients and mortality pattern in these patients.[5] Though studies have been done in Indian setup analyzing association of young CAD with Metabolic Syndrome, studies analyzing temporal trends in Indian setup, where young CAD is highly prevalent are still lacking. Furthermore, it is important in young patients to clarify the relationship between the pathogenesis of CAD and growth or lifestyle from childhood.[6]

Risk factors constitute a health risk for the individual and impose an overall burden on the economy. There are no large scale studies of adequate sample size to evaluate the prevalence of risk factors, risk factor patterns and electrocardiographic changes in Indian populations.[7] The present study was conducted to assess the cardiovascular risk factors in patients with Coronary artery disease.

In this study, ST elevation MI was seen in 22 males and 20 females, non ST elevation MI in 14 males and 13 females and unstable angina in 6 males and 9 females. We observed that common risk factors in CAD were smoking seen in 38, obesity in 14, sedentary lifestyle in 26, hypertension in 26, positive family history of premature IHD in 14, dyslipidemia in 45 and diabetes in 12.

Prabhakaran et al,[8] found that in 83 patients with young CAD (≤40 years), an increase in proportion of female patients, hypertension (p=0.004), dysglycemia (p<0.001), family history (p=0.01), metabolic syndrome (p<0.001), low high density lipoprotein (HDL) (p=0.07) and mean waist size (0.03) was noted over the years. Among males, increase in number of dysglycemics (p=0.0002), positive family history (p<0.0001) and mean waist size (0.032) was statistically significant.

We found that mean blood urea, creatinine, mean SGOT, SGPT, ALP, s. Bilirubin, TSP and DSP was non- significant among males and females. Mohan et al,[9] found that 4.6% of the study population had a family history of premature CAD. The overall

prevalence of diabetes was 16% (5.6% diagnosed during the study and the remaining 10.4% already on medication). Hypertension was present in 21% of subjects. The prevalence of dyslipidemia was significantly high, with 45.6% of study subjects having a high total cholesterol/high density lipoprotein ratio. Overall, 78.6% subjects had two or more risk factors for CAD.

The relationship between hypertension and cardiovascular risk is independent, continuous and consistent. Different studies have shown that smoker have high serum cholesterol, high triglyceride and LDL-c and low HDL-c. It is also seen that high triglyceride is also important for cardiovascular disease. Gupta et al,[10] in a prospective study found that male sex (77%) and sedentary lifestyle (73%) were identified as most common risk factors. Other risk factors in order of frequency were dyslipidemia (50%), diet (40%), diabetes mellitus (37%), oral tobacco addiction (37%), hypertension (33%), smoking (30%), alcohol (17%), family history (13%), obesity (13%) and OC pill intake (0%). Most of the patients (83%) had 3 or more risk factors.

## CONCLUSION

Acute coronary syndromes are a major cause of concern in the present-day world particularly when it happens in a younger age group population. There is association of conventional CV risk factors, such as, dyslipidemia, hypertension, sedentary lifestyle and smoking with coronary artery disease.

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