



Assessment of Risk Factors Associated with Coronary Artery Diseases in a Study Population- A Clinical Study

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Abstract

Background: Coronary artery disease (CAD) is one of the most common causes of mortality and morbidity in general population in both developed and developing countries. It is a leading cause of death in India. The present study was conducted to assess the risk factors for CAD.

Materials & Methods: The present study was conducted on 120 patients of both genders. Blood pressure measurement was carried out in each subject. Body weight (Kg) and height (m) were measured. Body mass index (BMI), defined as weight/ height (kg/m^2) was also calculated. Complete blood count, fasting plasma glucose (FPG), post-prandial plasma glucose (PPPG), lipid profile was calculated.

Results: out of 120 patients, males were 75 and females were 45. The difference was significant ($P=0.01$). Height (m) in males was 164.2 ± 4 and in females was 150.4 ± 2 . Weight (kg) in males was 72.5 ± 5 and in females was 64.4 ± 2 . BMI was 25.2 ± 3 in males and 26.7 ± 3 in females. SBP was 130.4 ± 12 in males and 124.2 ± 4 in females. DBP was 92.2 ± 6 in males and 86.6 ± 2 in females. FPG was 95.2 ± 2 in males and 93.2 ± 8 in females. PPPF was 136.4 ± 1 in males and 129.5 ± 2 in females. Total cholesterol was 188.0 ± 12 in males and 185.1 ± 12 in females. HDL was 44.2 ± 2 in males and 48.7 ± 3 in females. The difference was significant ($P < 0.05$). Family history was seen in 5% males and 4.2% females, smoking in 14% in males and 8% in females, DM in 17% in males and 10% in females, hypertension in 24% in males and 13% in females, dyslipidemia in 52% in males and 32% in females, BMI > 30 in 7% males and 16.50% females. The difference was significant ($P < 0.05$).

Conclusion: CAD is a commonly occurring disease having high mortality and morbidity. Contributing factors includes diabetes, obesity, hypertension etc.

Keywords: Coronary artery disease, Diabetes, Obesity.

Introduction

Coronary artery disease (CAD) is one of the most common causes of mortality and morbidity in general population in both developed and

developing countries. It is a leading cause of death in India. Earlier it was considered to be the disease of old but nowadays the occurrence in young adults is also common. The prevalence of

coronary vessel wall alterations in the general population is unknown. This is due to the fact that coronary angiography is generally only indicated in patients with a history of coronary artery disease or with clinical symptoms typical for this disease. India is undergoing a rapid health transition with rising burden of coronary artery disease (CAD). Among adults over 20 yr of age, the estimated prevalence of CAD is around 3-4 per cent in rural areas and 8-10 per cent in urban areas.¹

Rapid urbanisation has enhanced the occurrence of cases of CAD. The change is present lifestyle, changes in diet, physical inactivity, drug and alcohol intake, as well as an increase in the prevalence of DM. The prevalence of risk factors in a population determines the future burden on healthcare services and the loss of an individual's productive years. Risk factors constitute a health risk for the individual and impose an overall burden on the economy.²

There is male predominance in this disease. Obesity, hypertension, alcoholism, etc. are contributing factor in this disease. The role of diabetes mellitus may not be overlooked. Type II DM is commonly associated with CAD. Patient complains of discomfort, chest pain radiating towards arm, shoulder, back, neck and lower jaw. Heartburn is another common finding. Shortness of breath may also occur and sometimes no symptoms are present.³ The present study was conducted to assess the risk factors for CAD.

Table II Characteristics in patients

Parameters	Males	Females	P value
Height (m)	164.2±4	150.4±2	0.01
Weight (Kg)	72.5±5	64.4±2	0.001
BMI (Kg/m ²)	25.2±3	26.7±3	0.05
SBP (mm Hg)	130.4±12	124.2±4	0.02
DBP (mm Hg)	92.2±6	86.6±2	0.01
FPG mg/dL	95.2±2	93.2±8	0.01
PPPG mg/dL	136.4±1	129.5±2	0.00
Total cholesterol mg/dL	188.0±12	185.1±12	0.03
HDL mg/dL	44.2±2	48.7±3	0.02

Table II shows that height (m) in males was 164.2±4 and in females was 150.4±2. Weight (kg) in males was 72.5±5 and in females was 64.4±2. BMI was 25.2±3 in males and 26.7±3 in females.

Materials & Methods

The present study was conducted in the department of general medicine. It included 120 patients of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study.

General information such as name, age, gender etc was noted. Blood pressure measurement was carried out in each subject. Body weight (Kg) and height (m) were measured. Bodyweight was measured in kilograms to the nearest 0.1 kg using a digital scale. Body mass index (BMI), defined as weight/ height (kg/ m²) was also calculated. Heart rate was also measured. Complete blood count, fasting plasma glucose (FPG), post-prandial plasma glucose (PPPG), lipid profile, and liver and kidney function tests were also performed. A total cholesterol/high density lipoprotein (HDL) cholesterol value of ≥ 4.5 was considered abnormal. Results were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 120		
Males	Females	P value
75	45	0.01

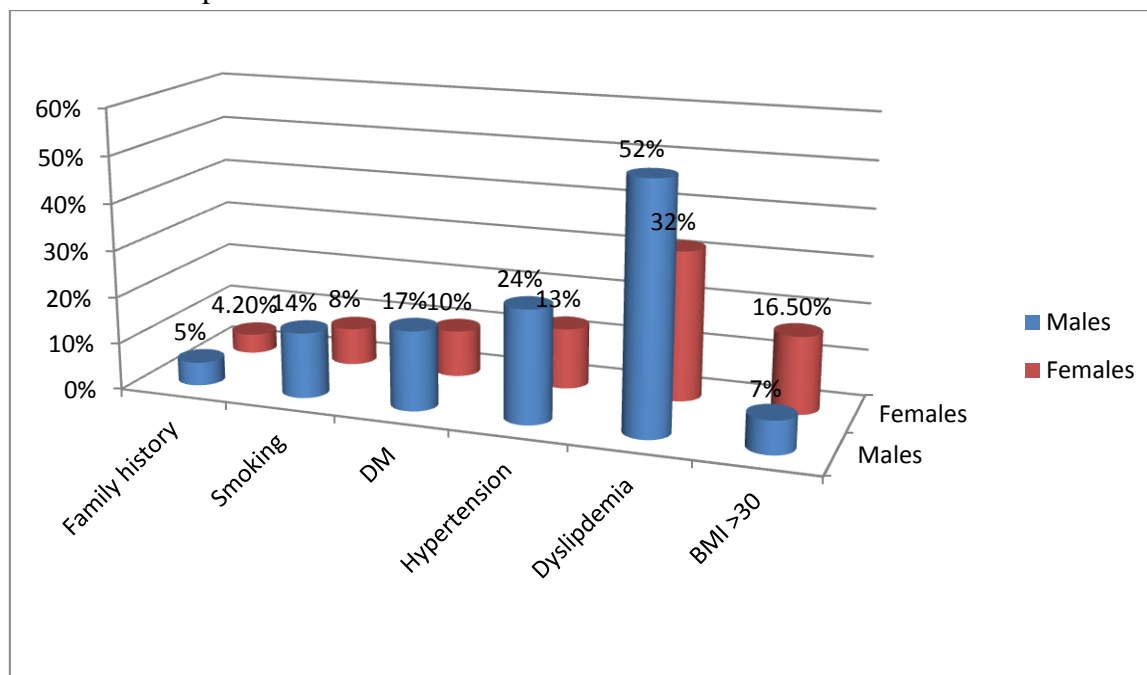
Table I shows that out of 120 patients, males were 75 and females were 45. The difference was significant (P-0.01)

SBP was 130.4±12 in males and 124.2±4 in females. DBP was 92.2±6 in males and 86.6±2 in females. FPG was 95.2±2 in males and 93.2±8 in females. PPPF was 136.4±1 in males and 129.5±2

in females. Total cholesterol was 188.0 ± 12 in males and 185.1 ± 12 in females. HDL was 44.2 ± 2

in males and 48.7 ± 3 in females. The difference was significant ($P < 0.05$).

Graph I Risk factors in patients



Graph I shows that family history was seen in 5% males and 4.2% females, smoking in 14% in males and 8% in females, DM in 17% in males and 10% in females, hypertension in 24% in males and 13% in females, dyslipidemia in 52% in males and 32% in females, BMI > 30 in 7% males and 16.50% females. The difference was significant ($P < 0.05$).

Discussion

CAD is common in today's life. Common symptoms are chest pain occurs regularly with activity, after eating, or at other predictable times is termed stable angina and is associated with narrowings of the arteries of the heart. Angina that changes in intensity, character or frequency is termed unstable. Unstable angina may precede myocardial infarction.⁴

In this study, out of 120 patients, males were 75 and females were 45. We found that height (m) in males was 164.2 ± 4 and in females was 150.4 ± 2 . Weight (kg) in males was 72.5 ± 5 and in females was 64.4 ± 2 . BMI was 25.2 ± 3 in males and 26.7 ± 3 in females. SBP was 130.4 ± 12 in males and

124.2 ± 4 in females. DBP was 92.2 ± 6 in males and 86.6 ± 2 in females. FPG was 95.2 ± 2 in males and 93.2 ± 8 in females. PPPF was 136.4 ± 1 in males and 129.5 ± 2 in females. Total cholesterol was 188.0 ± 12 in males and 185.1 ± 12 in females. HDL was 44.2 ± 2 in males and 48.7 ± 3 in females. This is similar as Singh et al.⁵

The study Shekhri et al⁶ revealed that 4.6% of the study population had a family history of premature CAD. The overall prevalence of diabetes was 16%. 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.

We found that family history was seen in 5% males and 4.2% females, smoking in 14% in males and 8% in females, DM in 17% in males and 10% in females, hypertension in 24% in males and 13% in females, dyslipidemia in 52% in males and 32% in females, BMI > 30 in 7% males and 16.50% females. This is in agreement with Ramchandran et al.⁷

CAD in young has better prognosis than older subjects. In terms of prognosis two risk factors obesity and current smoking are associated with poorer outcomes. Angiographic studies shows predominance of single vessel disease in young CAD patients. The prevalence of diabetes and hypertension seems to higher in young patients with CAD than without CAD. The prevalence of hypertension is 25% in young CAD as compared to 13% without CAD.⁸

A study by Dwivedi et al⁹ included 70 young (\leq 40 yrs.) CAD patients, 56 (80%) males and 14 (20%) females, mostly (67.14%) belonging to 36-40 age group. More than half (53%) of the patients were from low socioeconomic group. 61.42% were chronic smokers and all of them were males. 18.8% subjects gave history of premature CAD and/or cerebrovascular disease in their first degree relatives. Some of the subjects had distinct evidence of psychosocial stress preceding CAD episodes. Hypertension was seen in 51.42% cases. Obesity was observed in 35.71% cases, while incidence of underweight was noted in 14% subjects. 80.35% males and 91.66% females manifested upper segment obesity. 87.5% underweight CAD subjects too were centrally obese. Hypercholesterolemia was observed in 41.66% cases. Low HDL was the next most common dyslipidaemia. 7.14% cases were diabetic. Most ominous combination was smoking, low socioeconomic status, increased waist-hip ratio (WHR), dyslipidaemia, and HTN.

Conclusion

CAD is the disease with high mortality and morbidity. Risk factors are obesity, hypertension, hypercholesterolemia, smoking etc.

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