

Assessment of the profile of CAD patients: An observational study

Vivek Vilas Manade¹, Dr. S. K. Malani², C. Sridevi³, Rajendra Patil⁴, Shilpi Lahoty⁵

¹Senior Resident, Department of Cardiology, Dr. D Y Patil Medical College, Hospital & Research Centre, Pimpri, Pune 18, Maharashtra, India;

²HOD & Professor, Department of Cardiology, Dr. D Y Patil Medical College, Hospital & Research Centre, Pimpri, Pune 18, Maharashtra, India;

³Professor, Department of Cardiology, Dr. D Y Patil Medical College, Hospital & Research Centre, Pimpri, Pune 18, Maharashtra, India;

⁴Assistant Professor, Department of Cardiology, Dr. D Y Patil Medical College, Hospital & Research Centre, Pimpri, Pune 18, Maharashtra, India;

⁵Senior Resident, Department of Cardiology, Dr. D Y Patil Medical College, Hospital & Research Centre, Pimpri, Pune 18, Maharashtra, India (Corresponding author);

¹Email: dr.vivek.manade7@gmail.com;

²Email: drmalani2003@gmail.com;

³Email: csridevi2007@gmail.com;

⁴Email: docraj2007@gmail.com;

^{5*}Email: shilpilahoty12@gmail.com;

ABSTRACT:

Background: Cardiovascular diseases (CVD) and its complications account for approximately 12 million deaths annually in the Indian subcontinent. Hence; the present study was undertaken for assessing the profile of CAD patients.

Materials & methods: A total 50 cases of CAD in young patients [age < or = 40 years] were studied. The cases were taken from medical, surgical, cardiology OPD, wards & ICU. The study population was a mix of urban and rural population. Both males and females were included in our study. The history of each patient was noted in detail and a thorough clinical examination was performed. Relevant investigations were performed in individual case. Each patient was followed up until discharge and the final Outcome was noted – complications / recovery / death. Data analysis was done with the help of experts.

Result: The youngest patient in our study was 22 years old. Mean age of the patient in our study was 34.6. Maximum patients belonged to the age group of 36-40 years age. In our study males outnumbered the females 41 [82 %]. By using Fisher's exact test p-value > 0.05 therefore there is no significant association between body mass index with outcome. Chest pain was the most common presenting symptom in our study followed by syncope. Angiographically normal vessels were found in 2 [4%] of the patients.

Conclusion: More number of young ACS patients were males. The risk factors studied in this study did not show any association with short term mortality. Chest pain was the commonest presentation symptom. Higher NYHA and KILLIPS class were associated with greater mortality.

Key words: *Coronary artery disease, cardiovascular disease*

INTRODUCTION

Cardiovascular diseases (CVD) and its complications account for approximately 12 million deaths annually in the Indian subcontinent. Mortality related to cardiovascular diseases is higher as compare to other diseases in India. Several studies states that if CAD occurred before 40 years of age, called premature CAD. Several studies states that mortality from CAD is increasing in young Indians especially below age 40-50 years. Age wise differences have been noted in risk factors, clinical features and coronary artery anatomy in several studies. They found most of the risk factors in young patients being cigarette smoking, increased cholesterol levels, family history of IHD with single vessel disease predominance.¹⁻⁴Hence; the present study was undertaken for assessing the profile of CAD patients.

MATERIALS & METHODS

A total 50 cases of CAD in young patients [age < or = 40 years] were studied. The cases were taken from medical, surgical, cardiology OPD, wards & ICU. The study population was a mix of urban and rural population. Both males and females were included in our study.

Criteria for selection

- Patients who were admitted for STEMI, NSTEMI, UA, or Stable angina with age > 18 &< or = 40 years undergoing coronary angiography.
- Diagnosis of CAD/ACS as per guidelines from the ESC-ACCF-AHA-WHF joint taskforce

Criteria for exclusion

- Patients age < 20 years and > 40 years.
- Past history of ACS/coronary intervention.
- Patients died before CAG.
- All patients who had undergone CAG for surgical fitness in case of heart disease other than CAD.
- Patients with past history of heart diseases other than CAD.
- Patients with co-morbidities like any liver disease, renal disease or conditions which can increase the angina such as anaemia, arrhythmias etc.

The history of each patient was noted in detail and a thorough clinical examination was performed. Relevant investigations were performed in individual case. Each patient was followed up until discharge and the final Outcome was noted – complications / recovery / death. Data analysis was done with the help of experts. Chi-square test / Fisher's exact test used to find the association between outcome with associated diseases, risk factors, laboratory parameters, treatment given, type of ACS, number and name of vessel involved.

RESULTS

The youngest patient in our study was 22 years old. Mean age of the patient in our study was 34.6. Maximum patients belonged to the age group of 36-40 years age. In our study males

outnumbered the females 41 [82 %]. By using Fisher's exact test p-value > 0.05 therefore there is no significant association between body mass index with outcome. 40% of the patients were diabetics, 20% were hypertensive and remaining 22 % of them had a family history of ischemic heart disease. 96 % of the patients presented with CCS class 4 symptoms, 74 % of the patients were in NYHA class 1 and 80 % of the patients were in class 1 killips classification. Chest pain was the most common presenting symptom in our study followed by syncope. Angiographically normal vessels were found in 2 [4%] of the patients.

Table 1: Correlation of BMI and outcome

BMI kg/m ²	Outcome		Total	p-value
	Survive	Death		
< 18.5	2	0	2	0.6204
18.5 – 24.99	13	1	14	
25.0 – 29.99	30	1	31	
≥ 30.0	3	0	3	
Total	48	2	50	

Table 2: Clinical profile and outcome

Variable		Outcome		Total	p-value
		Survive	Death		
Angina Class	III	2	0	2	1.000
	IV	46	2	48	
NYHA CLASS	I	37	0	37	0.0392
	III	5	0	5	
	III	2	0	2	
	IV	4	2	6	
Killip's Class	I	40	0	40	0.0171
	III	4	0	4	
	III	0	0	0	
	IV	4	2	6	

Table 3: Presenting symptoms

Presenting complaints	Number of patients	Percentage (%)
Chest pain	48	96
Syncope	2	4
Total	50	100.0

Table 4: Angiographically normal coronaries

Normal Vessel	Number of patients	Percentage [%]
Yes	2	4
No	48	96
Total	50	100

DISCUSSION

Diagnostic cardiac catheterization is recommended whenever it is clinically important to define the presence of cardiac disease that cannot be evaluated adequately by non-invasive techniques. Because the risk of a major complication from cardiac catheterization is less than 1% with mortality of less than 0.08%, many doctors can perform the catheterization safely now. Coronary heart disease (CHD) represents the leading cause of death in adults in the western world. Myocardial infarction (MI) is the lethal manifestation of CHD and can present as sudden death. Although MI mainly occurs in patients older than 40, young men or women can suffer MI. Fortunately, its incidence is not common in patients younger than 40 years. However, the disease carries a significant morbidity, psychological effects, and financial constraints for the person and the family when it occurs at a young age. The protection offered by young age has been slowly taken away by the increased prevalence of risk factors for CHD in adolescents such as smoking, obesity, and lack of physical activity.^{5- 9}Hence; the present study was undertaken for assessing the profile of CAD patients.

In the present study, the youngest patient was 22 years old. Mean age of the patient in our study was 34.6. Maximum patients belonged to the age group of 36-40 years age. In our study males outnumbered the females 41 [82 %]. By using Fisher's exact test p-value > 0.05 therefore there is no significant association between body mass index with outcome. 40% of the patients were diabetics, 20% were hypertensive and remaining 22 % of them had a family history of ischemic heart disease. Mirzaeipour F et al estimated the amount of the effect of each classic risk factor on CAD (coronary artery disease) among Aja personnel. This matched case-control study was conducted on 1000 male Aja personnel admitted selecting Aja hospitals in Tehran in 2017. The samples were selected using purposive-graded sampling method. The 250 military patients hospitalized for CAD were considered as a case group. Each case was individually matched for age and service force with three military patients without CAD. Data were gathered using standard demographic information and history of risk factors questionnaire and analyzed using SPSS 23 and statistical tests. Odds ratio measured through Cochran-Mantel-Haenszel test and used to estimate the amount of the effect of each classic risk factors on CAD. Data analysis indicated that the risk factors including diabetes, hyperlipidemia, smoking, hypertension, and positive family history of CAD enhance the probability of CAD as much as 79.2%, 77.3%, 67.7%, 64.1%, and 56.6%, respectively. Diabetes and other modifiable risk factors have the greatest impact on CAD among the concerned Aja personnel.¹⁰

In the present study, 96 % of the patients presented with CCS class 4 symptoms, 74 % of the patients were in NYHA class 1 and 80 % of the patients were in class 1 killips classification. Chest pain was the most common presenting symptom in our study followed by syncope. Angiographically normal vessels were found in 2 [4%] of the patients. Park GM et al analyzed 607 asymptomatic patients with type 2 diabetes who underwent coronary computed tomographic angiography. The cardiac event was defined as a composite of cardiac death, nonfatal myocardial infarction, acute coronary syndrome, and coronary revascularization. Significant CAD (diameter stenosis $\geq 50\%$) in at least one coronary artery on CCTA was observed in 188 (31.0%). During the follow-up period (median 4.3 [interquartile range, 3.7–4.8] years), 71 patients had 83 cardiac events. Clinical risk factors for significant CAD were age, male gender, duration of diabetes, hypertension, current smoking, family history of

premature CAD, previous history of stroke, ratio of total cholesterol to high-density lipoprotein cholesterol, and neuropathy. Using these variables, we formulated a risk score model, and the scores ranged from 0 to 17 (area under the curve=0.727, 95% confidence interval=0.714–0.739, $P<0.001$). Patients were categorized into low (≤ 3), intermediate (4–6), or high (≥ 7) risk group. There were significant differences between the risk groups in the probability of significant CAD (12.6% vs 29.4% vs 57.7%, P for all <0.001) and 5-year cardiac event-free survival.¹¹

CONCLUSION

More number of young ACS patients were males. The risk factors studied in this study did not show any association with short term mortality. Chest pain was the commonest presentation symptom. Higher NYHA and KILLIPS class were associated with greater mortality.

REFERENCES

1. Gupta R, Guptha S, Sharma KK, Gupta A, Deedwania P. Regional variations in cardiovascular risk factors in India: India heart watch. *World J Cardiol.* 2012; 4:112-20.
2. World Health Organization. Global status report on non-communicable diseases 2014. Geneva: World Health Organization; 2014.
3. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): Case-control study. *Lancet.* 2004; 364:937-52
4. Sharma M, Ganguly NK. Premature coronary artery disease in Indians and its associated risk factors. *Vasc Health Risk Manag.* 2005; 1:217-25.
5. Prajapati J, Jain S, Virpariya K, Rawal J, Joshi H, Sharma K, et al. Novel atherosclerotic risk factors and angiographic profile of young Gujarati patients with acute coronary syndrome. *J Assoc Physicians India.* 2014; 62:584-8.
6. Siddique MA, Shrestha MP, Salman M. Age related differences of risk profile and angiographic findings in patients with coronary heart disease. *BSMMU J.* 2010; 3:13-7.
7. Mammi MV, Pavithran K, and Abdu Rahiman P, Pisharody R, Sugathan K. Acute myocardial infarction in north Kerala-A 20-year hospital-based study. *Indian Heart J.* 1991; 43:93-6.
8. Kaul U, Bhatia V. Perspective on coronary interventions and cardiac surgeries in India. *Indian J Med Res.* 2010; 132:543-8.
9. Prajapati J, Joshi H, Sahoo S, Virpariya K, Parmar M, Shah K. AGE-related differences of novel atherosclerotic risk factors and angiographic profile among gujarati acute coronary syndrome patients. *Journal of clinical and diagnostic research: JCDR.* 2015 Jun; 9(6): OC05.
10. Mirzaeipour F, Seyedmazhari M, Pishgooie AH, Hazaryan M. Assessment of risk factors for coronary artery disease in military personnel: A study from Iran. *J Family Med Prim Care.* 2019;8(4):1347-1351.
11. Park GM, An H, Lee SW, et al. Risk score model for the assessment of coronary artery disease in asymptomatic patients with type 2 diabetes. *Medicine (Baltimore).* 2015;94(4):e508.