

Study of Clinical Profile of Acute Myocardial Infarction in Tertiary Care Center: A Retrospective Study

M Mohamed Arafath¹, R Viswanathan²

¹Consultant, Department of General Medicine, Shifa Hospitals, Tirunelveli, Tamil Nadu, India, ²Senior Consultant, Department of General Medicine, Shifa Hospitals, Tirunelveli, Tamil Nadu, India

Abstract

Introduction: Coronary artery disease (CAD) is one of the most common causes of mortality and morbidity in developed and developing countries. 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.

Aim: This study aims to study the clinical profile and risk factor of CADs.

Materials and Methods: A total of 42 patients with a confirmed diagnosis of CADs were included in this study. Patient demographic, presentation, and examination data were collected and analyzed. Results were analyzed using appropriate statistical tools.

Results: Out of 42 patients, 31 were male, and 11 were female; 78.6% were more than 51 years age group. Hypertension, diabetes, and both were more common comorbid in the patients. Chest pain was the most common symptoms, 71.4% were had ST-elevation myocardial infarction (MI) and the majority had single-vessel CADs. About 64.3% of patients underwent percutaneous transluminal coronary angioplasty.

Conclusion: Early identification of risk factors is vital to avoid the incidence of coronary heart disease, as is community knowledge of risk factors, symptoms, and signs of acute MI so that early referral to a coronary care unit may be made to minimize morbidity and mortality in the community.

Key words: Coronary artery diseases, Diabetes, Electrocardiogram, Hypertension, Risk factors

INTRODUCTION

Coronary artery disease (CAD) is one of the most common causes of mortality and morbidity in developed and developing countries. 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. The second half of the 20th century has witnessed a global spread of the CAD epidemic, especially in

developing countries, including India. The WHO predicts the global burden of cardiovascular disease (CVD) with increasing mortality and economic burden on health care.^[1]

CAD is a type of blood vessel disorder included in the general category of arteriosclerosis. Arteriosclerosis is often referred to as “hardening of the arteries” and begins as soft deposits of fat that hardens with age.^[2-4] Atheroma’s has a preference for the coronary arteries. CAD occurs when the arteries that supply blood to the heart muscle (coronary arteries) become hardened and narrowed. The arteries harden and become narrow due to the buildup of plaque on the arteries’ inner walls or lining (atherosclerosis). Blood flow to the heart is reduced as plaque narrows the coronary arteries. This decreases the oxygen supply to the heart muscle. Atherosclerotic heart disease, cardiovascular heart disease, ischemic heart disease, coronary heart disease, and CAD are synonymous terms used to describe this disease process.^[2]

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Corresponding Author: Dr. R Viswanathan, Department of General Medicine, Shifa Hospitals, Tirunelveli, Tamil Nadu, India.

India has one of the highest burdens of CVD worldwide. The annual number of deaths from CVD in India is projected to rise from 2.26 million (1990) to 4.77 million (2020).^[5] Coronary heart disease prevalence rates in India have been estimated over the past several decades and have ranged from 1.6% to 7.4% in rural populations and from 1% to 13.2% in urban populations.^[6] The INTERHEART study showed that CVD risk factors such as abdominal obesity, hypertension, and diabetes are higher among Indians, even at young ages than among other ethnic groups.^[7] The prevalence rates of CVD risk factors have been rapidly rising within India over the past 25 years, particularly within urban communities.^[8]

Aim

This study aims to study the clinical profile and risk factor of CADs.

MATERIALS AND METHODS

This retrospective study was conducted to analyze the clinical profile and risk factor of CADs. A total of 42 patients with a confirmed diagnosis of CADs were included in this study. All the particulars were inquired by a questionnaire containing their history, personal h/o, and family h/o. All the patient's demographic details were collected, thorough clinical history and clinical examination, routine laboratory investigation had done. Blood samples were collected for blood glucose and serum lipid profile estimation, and resting electrocardiogram (ECG) was recorded. Patients were managed as per hospital protocol. Results were analyzed using appropriate statistical tools.

RESULTS

Out of 42 patients, 31 were male, and 11 were female [Table 1].

Out of 42 patients, 31 were male, and 11 were female. Based on age group, 2 were below 40 years, 7 were between 41 and 50 years, 10 were between 51 and 60 years, and 23 patients had more than 60 years [Table 2].

Out of 42 patients, 31 were male, and 11 were female. Based on the risk factor, 17 patients had hypertension, 2 patients had diabetes, 14 patients had hypertension and diabetes, 12 patients had a habit of smoking, 9 patients had a habit of alcohol consumption, and 6 patients had hypercholesterolemia [Table 3].

Based on symptoms, 41 patients had chest pain, 14 patients had perspiration, 11 patients had palpitation, 3 patients had syncope, 7 patients had nausea and vomiting, and 9 patients had dyspnea [Table 4].

Thirty-one patients had single-vessel diseases, seven patients had double-vessel diseases, and four patients had triple-vessel diseases [Table 5].

Based on ECG, 30 patients had ST-elevation myocardial infarction (STEMI), 7 patients had non-STEMI, and 5 patients had ischemia [Table 6].

Based on treatment, 14 patients had thrombolysed, 27 patients had percutaneous transluminal coronary angioplasty, and 1 patient had coronary artery bypass grafting (CABG) [Table 7].

DISCUSSION

In this present study, most were male than females; most of the affected were older age populations. Hypertension and diabetes are the major risk factor among the study population. Chest pain was the common symptoms followed by perspiration, and the majority of the population ECG changes shows STEMI. Three-fourth study population had single-vessel diseases.

Zuhdi *et al.*^[9] categorized the patients into young (<45 years for men and <55 years for women) and old (45 years and older for men and 55 years and older for women). There were 1595 patients, of which 16% were categorized into the young CAD group and were significantly associated with more active smoking and obesity than the older group. The study also found a preponderance toward single-vessel disease in the young CAD group with better clinical outcomes.

CAD generally affects men more than women. Lee *et al.*^[10] studied the various aspects of gender differences in 10,554 PCI patients. Women, on average, were 5 years older than men at presentation and with a higher prevalence of risk factors. The in-hospital and 6-month mortality were also higher in women. In another paper, Lu *et al.*^[11] looked into the differences in gender and found that among 13,591 patients, 24.2% were women. They had more risk factors, were unlikely to undergo intervention, and had higher mortality.

Idris *et al.*^[12] studied explicitly on the woman of reproductive age. The authors reported that out of 9702 patients, 24.2% were female. Still, only 1.9% were at the reproductive period (from 20 to <40 years of age) and were associated with an Indian ethnicity, diabetes mellitus, and hypertension. Young female patients commonly present with STEMI and have a poorer prognosis.

Murty *et al.*^[13] reviewed 5579 autopsy reports done at University Malaya Medical Centre from 1996 to 2005 to study the prevalence of cardiac deaths in females and

Table 1: Gender distribution

Gender	Frequency	Percentage
Male	31	73.8
Female	11	26.2

Table 2: Age distribution

Age group	Frequency	Percentage
<40	2	4.8
41–50	7	16.7
51–60	10	23.8
>61	23	54.8

Table 3: Risk factors

Risk factors	Frequency	Percentage
HTN	17	40.5
DM	25	59.5
HTN+DM	14	33.3
Smoking	12	28.6
Alcohol	9	21.4
Hypercholesterolemia	6	14.3

HTN: Hypertension; DM: Diabetes mellitus

Table 4: Symptoms

Symptoms	Frequency	Percentage
Chest pain	41	97.6
Perspiration	14	33.3
Palpitation	11	26.2
Syncope	3	7.1
Nausea and vomiting	7	16.7
Dyspnea	9	21.4

Table 5: Type of CADs

Type of CAD	Frequency	Percentage
Single-vessel disease	31	73.8
Double-vessel disease	7	16.7
Triple-vessel disease	4	9.5

CADs: Coronary artery diseases

found that 83 out of 936 female deaths were due to cardiac causes. The three leading causes reported in the study were advanced CAD (14.5%), hypertensive heart disease (13.3%), and coronary atherosclerosis (12.0%). The study said that hypertension, diabetes, and pre-menopausal age were the most significantly associated factors.

Chiam *et al.*^[14] studied the prevalence of ethnicity and conventional risk factors of diabetes mellitus, hypertension, and hyperlipidemia in 302 patients admitted for CABG in their center. Indian patients were associated with a combination of all three risk factors, while the Chinese

Table 6: ECG changes

ECG	Frequency	Percentage
STEMI	30	71.4
NSTEMI	7	16.7
Ischemia	5	11.9

ECG: Electrocardiogram, STEMI: ST-elevation myocardial infarction, NSTEMI: Non-ST-elevation myocardial infarction

Table 7: Treatment modalities

Treatment	Frequency	Percentage
Thrombolized	14	33.3
PTCA	27	64.3
CABG	1	2.4

CABG: Coronary artery bypass grafting, PTCA: Percutaneous transluminal coronary angioplasty

and Malays mainly were associated with hypertension and hyperlipidemia.

Dhanjal *et al.*^[15] compared the cardiovascular risk factors profile of Asian patients admitted with myocardial infarction (MI) in a hospital in Kuala Lumpur (42 patients) and Birmingham, U.K. (28 patients), with Caucasian patients admitted with MI in Birmingham (20 patients). The study found a higher prevalence of diabetes among Asians in both countries than Caucasians, which may explain the higher prevalence of CAD in this ethnic group regardless of locality.

Echocardiography, particularly stress echocardiography, is a valuable investigation in patients at intermediate or high risk of CAD. However, interpretation of the acquired images is subjective and depends on the acoustic windows. Acharya *et al.*^[16] studied various grayscale features of echocardiography images from a database of 400 CAD cases and 400 normal and compiled all the features that had good discriminating capability into a Gaussian mixture model classifier.

Lee *et al.*^[17] retrospectively reviewed 192 STEMI cases who received thrombolysis using streptokinase and found reperfusion failure rate using ECG criteria of 56.8% associated with diabetes mellitus, hypertension, anterior MI, longer door-to-needle time, and high total white cell.

CONCLUSION

This study concluded that older people were most probably, and hypertension and diabetes are the significant risk factors for CADs. Urgent steps are needed to modify lifestyle by increasing physical activity, changing diet, and perhaps making aggressive use of statins as part of the preventive strategy to reduce risk factors and, thus, the burden of CAD.

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