



Full Length Research Paper

Clinical profile of acute inferior wall myocardial infarction in a semi urban population in India

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Abstract

A prospective observational study of 50 patients with inferior wall myocardial infarction in a semi urban population in India revealed the risk factors, clinical symptoms, signs and the complications among middle aged males engaged in agricultural pursuits. The mean age was 47 years. Chest pain was the commonest presenting feature (98%) among the patients and the majority was smokers. Two patients developed complete heart block and hypotension and died within 24 hours while one patient died on the 4th day. Targeted smoking causational programme, health educational programmes and access to units with facilities for complete haemodynamic monitoring for selected patients is recommended to reduce the incidence from myocardial infarction and mortality from its complications.

Keywords: Inferior myocardial infarction, clinical profile, semi urban, India.

INTRODUCTION

The mortality from coronary artery disease is increasing rapidly in developing countries like India. It is predicted that mortality from cardiovascular diseases in developing countries would double from 1970 to 2015. In India alone there had been 1.2 million deaths from coronary heart disease in 1990 and an increase in cardiovascular deaths by 11.1% is predicted by 2020 (RefeEzzati et al., 2002; Murray and Lopez, 1997; Rodgers et al., 2000; Ezzati et al., 2002). An increasing trend in cardiovascular disease mortality among the rural population in India has also been noted. 5 multiple risk factors are implicated, ranging from cigarette smoking, hypertension, diabetes mellitus, and obesity to various psychosocial stresses imposed by social dynamics and urbanisation, (Yusuf et al., 2001). It is known that smoking and diabetes mellitus are independent risk factors for coronary artery disease among those engaged in agricultural pursuits and of a low socio economic status among which obesity and a sedentary life style are less common risk factors (Gupta et al., 1997; Pais et al., 2001; Gupta et al., 1997). Most of these studies have been in rural India and the magnitude of the problem in a Simi urban population in India is not

clear. We endeavoured to ascertain the extent to which these risk factors were prevalent among a selected semi urban population.

MATERIALS AND METHODS

A prospective observational study was conducted from January 2001 to March 2003 at the SriDevarajUrs Medical college Hospital and research centre, Kolar, Karnataka, India.

All adult patients presenting to the medical unit at the SriDevarajUrs Medical college Hospital within 12 hours of onset of chest pain were screened for acute myocardial infarction. The initial screening was based on the conventional clinical features of a myocardial infarction and ECG evaluation (Peter et al., 2007). The first ECG included V3R and V4R apart from the standard 12 leads. Those confirmed to have an acute inferior myocardial infarction or a right ventricular infarction was recruited for the study after obtaining written as well as verbal informed consent from all the patients. Approval had been obtained from the hospital.

Inclusion criteria

1. ECG evidence of an acute inferior myocardial infarct-

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Table 1. Age distribution of patients (n = 50)

Age	Frequency	Percentage
30-34	1	2%
35-39	1	2%
40-44	9	18%
45-49	10	20%
50-54	8	16%
55-59	6	12%
60-64	5	10%
65-69	6	12%
70-74	2	4%
75-79	1	2%
>80	1	2%

Table 2. Presenting symptoms of the patients (n = 50)

Symptoms	Number	Percentage
Chest pain	49	98%
Sweating	40	80%
Palpitation	40	80%
Breathlessness	30	60%
Vomiting	20	40%
Syncope	1	2%

ion i.e, ST elevation >1 mm in limb leads II, III and aVF or evidence of a right ventricular infarction i.e, the ST segment depression is less than 50% of the ST segment elevation in lead aVF. Slope elevation of the ST segment relatively increased amplitude of T wave in lead V4R.

2. CK (MB) >28IU/L(accepted value for the local laboratory)

Exclusion criteria

1. Patients who presented longer than twelve hours after onset of chest pain.
2. Patients with a history of chronic lung diseases, previous myocardial infarction, valvular heart disease and left bundle branch block.

All the included patients were monitored daily from the time of admission up to discharge from the medical unit. The demographic data, comorbidities, risk factors for coronary artery disease, condition at the time of admission, and the daily cardiac status were recorded on a pre-designed data collection form. ECGs were done in all the included patients at the time of admission and then daily up to discharge. The first ECG included V3R and V4R apart for the standard 12 leads. CK (MB) was done on admission and second day after admission. A random blood sugar was done in all patients on admission. In patients with known diabetes, Fasting blood sugar and 2

hour post prandial blood sugar were estimated on the day after admission. All patients who developed arrhythmias were subjected to continuous ECG monitoring after transferred to the intensive care unit.

RESULTS

The age distribution of the study population was shown in table 1. The ages ranged from 34 to 87years. The peak incidence was found in age group of 40 – 54, and the mean age was 47years. 90% of patients were male while only 10% were female (Table 1).

(Table 2) showed the presenting symptoms of the patients. Majority of the patients (98%) complained of chest pain on presentation followed by sweating (80%), palpitation (80%), breathlessness (60%) and vomiting (40%). Only 2% of patients presented with syncope.

With regards to radiation of the pain, twenty two patients (44%) suffered radiation to left upper limb, 5 patients (6%) to right upper limb, 5 patients (6%) to epigastrium, 5 patients (6%) to neck area and the rest suffered radiation to jaw and to the back (Figure 1). In most of the patients, symptom onset was between 6 am and 12 noon. In 60% of patients, symptom onset was between 6am to 12 noon while in 25%, it was between 12 midnight and 6 am. Only 4% of the patient presented between 6 pm and 12 midnight.

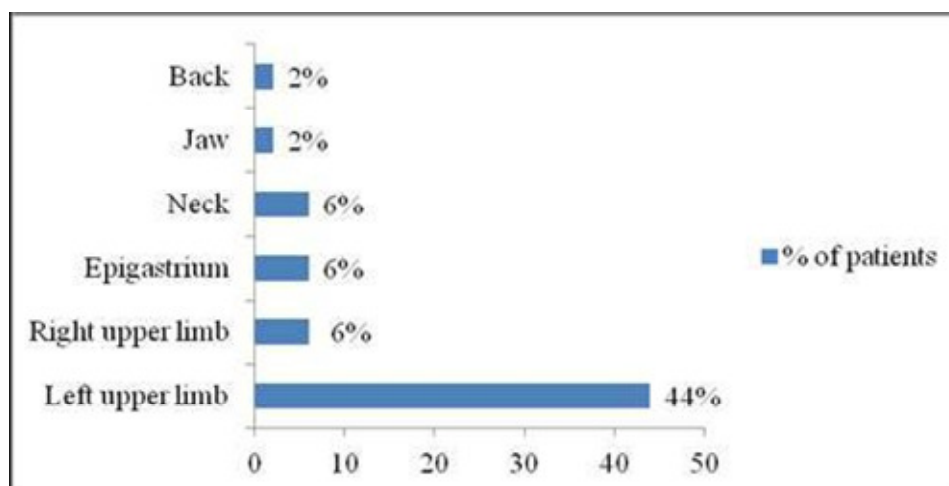


Figure 1. Pattern of pain radiation (n = 50)

Table 3. Risk factors among patients (n = 50)

Variables	Number	Percentage
Smoking	36	78%
Alcohol	18	36%
Systemic hypertension	20	40%
Diabetes mellitus	8	16%
Family history of sudden cardiac death	6	12%

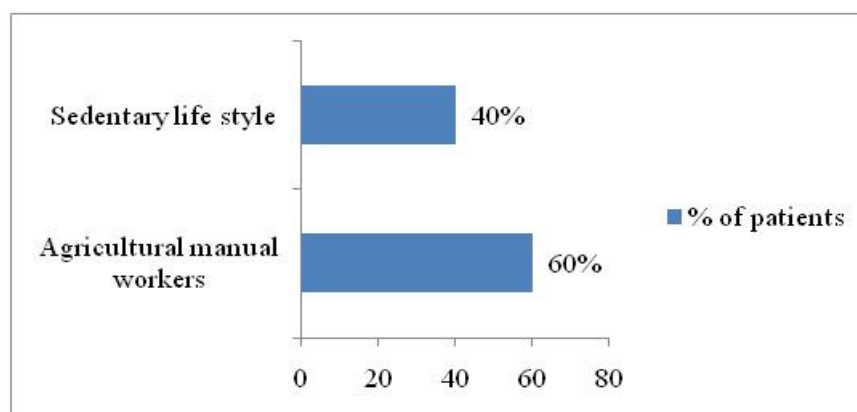


Figure 2. Occupation and Life style among patients (n = 50)

Risk factors of the patients were shown in (Table 3). 78% of the patients were smokers and they were smoking more than 20 cigarettes per day. Average duration of smoking was 10 years. 36% were drinking alcohol, 40% had systemic hypertension, 16% had diabetes mellitus and 12% had family history of sudden cardiac death respectively. Among the patients with diabetes mellitus, 75% were on oral hypoglycemic agents

while 25% were on insulin preparations. Similarly, 75% of hypertensive patients were on regular treatment while 25% of them were not on any treatment at the time of occurrence of Myocardial infarction (Table 3).

With regards to occupation and life style, 60% of the patients were agricultural manual workers while the others led a sedentary life style (Figure 2).

Table 4. Clinical features of the patients (n = 50)

Clinical features	Number	Percentage
Pulse<60/min	15	30%
Blood pressure <100mmHg (systolic)	15	30%
Raised JVP	15	30%
Pallor	10	20%
Right sided S3	10	20%
Pulse>100 /min	6	12%
Tender hepatomegaly	5	10%

On general and cardiovascular examinations, findings showed that 30% of the patients had decreased pulse rate which was less than 60 beats per minutes, 30% had low systolic blood pressure, 30% had raised jugular venous pressure, 20% had right sided auscultatory finding of S3, and 10% had tender hepatomegaly (Table 4).

Eleven patients (22%) developed arrhythmias, of which Second degree Mobitz type 1 block was the commonest as 5 patients had it while First degree AV block was observed in 2 patients. Atrial fibrillation was present in 2 patients (4%) and it developed within the first 24 hours. Complete heart block was noted in 2 patients (4%). All the patients with complete heart block developed hypotension which was refractory to interventions with fluid and inotropes (Dopamine) and died within 24 hours of admission. One of them developed a posterior wall infarction on the third day of admission expired on the 4th day.

DISCUSSION AND CONCLUSIONS

Smoking is a well-recognized risk factor for coronary heart disease (Teo KK et al., 2006; Carlson LA et al., 1985). In our study smoking was the commonest risk factor detected and these patients developed myocardial infarctions despite being engaged in agricultural pursuits and leading a non-sedentary life style. It addresses the need for targeted smoking cessation programs to reduce the incidence of coronary artery disease, as smoking is a modifiable risk factor. It is important to take a detailed history regarding chest pain as 98% of the patients presented with chest pain. One should avoid the attribution of chest pain among heavy manual workers to pain of musculoskeletal origin unless proved otherwise by ECG evaluation which should be facilitated as an essential urgent investigation. Contrary to expected hemodynamic improvement with fluid resuscitation when hypotension complicates inferior wall myocardial infarctions, the two patients with hypotension in this study failed to respond to fluid therapy. In such cases bradycardia associated with complete heart block can compromise cardiac output and is expected to improve with Dopamine owing to its chronotropic effects apart for

the benefits of inotrope. However in this study in both the patients with complete heart block hypotension persisted despite the use of Dopamine raising the possibility of undetected anterior wall extension of the infarction. These observations highlight the importance of complete hemodynamic monitoring of systemic vascular resistance, mean arterial blood pressure, cardiac output and pulmonary capillary occlusive pressure as a reflection of left ventricular filling pressures that would enable the clinician to optimize therapy by the most appropriate manipulation of fluid interventions and inotropes as well as the choice of the inotrope (Haji SA et al., 2000). Arguably Dobutamine would be a better choice than Dopamine as an increase in the pulmonary vascular resistance with dopamine could adversely impact right ventricular failure.

We recommend educational programmes to address smoking and psychosocial stresses among agricultural workers in semi urban populations. Sensitize primary health care personnel on the importance of chest pain as the commonest presentation of myocardial infarction, and the need for a detailed diagnostic evaluation including ECG irrespective of the social or occupational background. All patients with hemodynamic compromise and arrhythmias should have early access to coronary care units fully equipped with facilities for hemodynamic monitoring and availability of the complete range of vasoactive and inotropic agents to provide optimal care as appropriate to the hemodynamic subsets associated with inferior wall myocardial infarctions.

The limitation of this study in determining the risk factors for coronary artery disease is the relatively small number of patients. We suggest the conduction of larger multicenter epidemiological studies to determine the statistical significance of these risk factors among this important segment in the Indian society.

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