A Study of Involvement of Different Walls of Myocardium in Acute Myocardial Infarction in Pakistani Population

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Abstract: Coronary artery disease particularly myocardial infarction remains the leading cause of mortality and morbidity worldwide. There are few modifiable and un-modifiable risk factors of MI. Myocardial infarction is diagnosed on the basis of typical chest pain, raised cardiac enzymes and ECG changes, any two of them lead to the diagnosis. In this study old patients of MI, patients with complicated heart disease and the patients who underwent cardiac surgery were excluded. **Results:** Amongst 50 patients 36(72%) were males and 14(28%) were females. 70% presented with typical chest pain. 48% had anterior wall MI, 32% had anterolateral MI, 16% had anteroseptal MI and 21% had inferior wall MI, whereas 8% had global MI. **Conclusion:** Anterior wall is commonest area involved in MI and 70% of all patients presented with typical chest pain and the most important risk factor is smoking.
Keywords: Myocardial infarction, anterior wall, anterolateral wall, lateral wall, inferior wall.

Coronary artery disease particularly myocardial infarction remains the leading cause of morbidity and mortality world wide[1]. The incidence of coronary artery disease in the region of South Asia including India and Pakistan is as high as in European population[2]. Atherosclerosis of coronary arteries is a cause of ischaemic heart disease in almost about 90% of cases. Other less important disorders involving coronary arteries include congenital anomalies, arteritis, polyarteritis and connective tissue disorders[3].

Most of the acute myocardial infarctions are caused by coronary artery thrombosis. Preexisting atherosclerotic plaque plays a major role in the development of coronary atherosclerosis[4]. The risk factors that predispose to coronary artery disease are divided in two major groups. Firstly, modifiable risk factors e.g. dyslipidaemias, hypertension, diabetes, smoking and obesity. Secondly, non-modifiable risk factors are age, sex, race, and positive family history[5]. Acute myocardial infarction may be silent but most commonly patients present with symptoms like chest pain, dyspnoea, sweating, nausea, vomiting or syncope[6]. The risk of myocardial infarction increases when two or more risk factors are present in the same individual[7].

Diagnosis of coronary artery disease is usually based on typical history and examination, confirmed by ECG changes and raised cardiac enzymes[8]. ECG changes are usually confined to the leads that face the infarcted area of myocardium[9].

Aims and Objectives

These were as:
1. To determine the most common variety of myocardial infarction in Pakistani population presenting to Mayo Hospital Lahore Pakistan.
2. To determine the different modes of presentation of myocardial infarction (anterior, inferior, posterior, anterolateral).

Material and methods

This study was conducted in Medical Wards and CCU of Mayo Hospital Lahore Pakistan, on 50 consecutive patients presenting for the first time with acute myocardial infarction admitted through emergency department. Data collected from the patients fulfilling the inclusion criteria.

Inclusion criteria

All patients with acute myocardial infarction presenting for the first time with:
1. Typical history of chest pain and related symptoms (sweating, palpitation, dyspnoea).
2. ECG changes (ST segment elevation >1mm in limb leads and > 2mm I chest leads).
3. Raised cardiac enzymes

Those patients who will fulfilled at least two of the three criteria were included in the study.

Exclusion criteria

1. Old case of myocardial infarction.
2. Patients with complicated heart disease like heart failure, valvular heart disease, cardiomyopathy, congenital heart disease.
3. History of previous cardiac surgery.

Results

Amongst all 50 patients, 36(72%) were males while 14(28%) were females.

Majority of patients that is 70% presented with history of typical chest pain, while 8% patients presented with palpitations, dyspnoea, sinking of heart, nausea and vomiting each. They had typical ECG changes, raised cardiac enzymes and troponin-T positive.
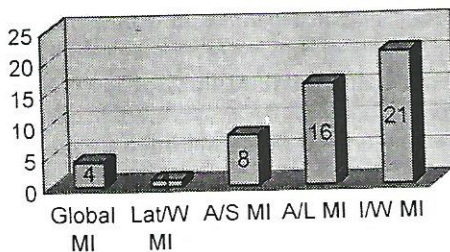
Table. Mode of presentation in acute MI.

Mode of presentation	n
Typical chest pain	70
Palpitation	8
Dyspnoea	8
Nausea & vomiting	8
Others	6

Fig. Gender distribution
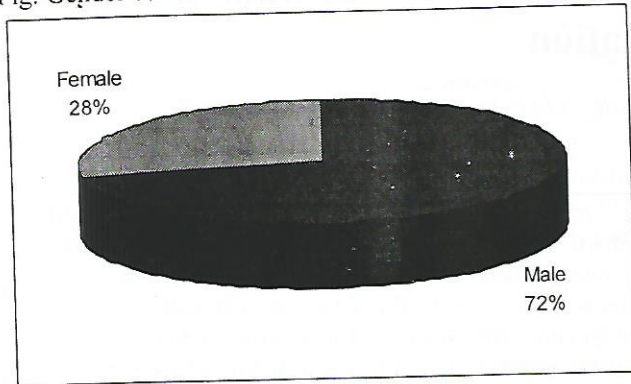
Among fifty patients 24(48%) had anterior wall MI out of which 16(32%) had anterolateral MI and 8(16%) had anteroseptal MI. 21(42%) patients had inferior wall

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MI, 4 (8%) patients had global MI, out of 21 patients with inferior wall MI 5(10%) patients had right ventricular infarct, 1(2%) patient had lateral wall MI and 1(2%) patient had posterior wall MI.

Out of these 50 patients 19(38%) were diabetic, 16(32%) were hypertensive, 8(16%) were both diabetic and hypertensive, 26(52%) were smokers, 25(50%) had hyperlipidemia, 16(32%) had positive family history, 20(40%) patients had more than one risk factor.

Discussion

Ischaemic heart disease is the leading cause of mortality[1]. The primary concern is to determine the high-risk cases and make a cost effective follow-up and prediction of outcome. The area of the heart involved determines the prognosis. Most prevalent area of the heart involved be determined so that epidemiological data and guide lines for primary health care workers concerning their high risk patients be stratified for follow up and secondary prevention of ischaemic heart disease.

In our study most patients presented with typical chest pain (70%) along with that atypical symptoms were 30% that include palpitation, nausea, vomiting, dysponea and dizziness (table), in these 1/3 patients the ECG and cardiac enzymes are diagnostic. ECG fulfill the criteria of diagnosis as well as it serve the purpose to locate the

involved wall, therefore ECG should be considered mandatory in patients over the age of 35years with typical or atypical symptoms[14]. Despite the small sample our observation were in accordance with Verma Y, Sharma R et al. Their study stated the incidence of anteroseptal MI 37%, anterior wall MI 20%, inferior wall MI 28%, lateral wall MI 15% and extensive MI 15%[10]. Whereas there were some differences with McPherson DD et al, who showed anterior wall MI 88% and inferior wall MI 42%[11]. we also observed that 5 out of 21 patients with inferior wall MI had right ventricular MI that was in accordance with Akbar AM et al[12]. Where as Tahirkhali NK et al showed 10% right ventricular MI in association with anteroseptal MI[13]. Our data showed that anterior wall MI is most commonly involved with lateral wall MI.

Common risk factors were smoking 52%, hyperlipidaemia 50%, Diabetes Mellitus 38% and hypertension 32% whereas 40% had all the risk factors, these observations were in accordance with Saleem A et al[14]. When we observed and compared clinical characteristics and out come of MI among males and females, anterior wall and inferior wall MI were more common in males than females, as observed by Raza MA et al[15], where as 8% of patients with global MI were all males. Most of the males (88%) presented with typical symptoms and 70% females with typical symptoms. We can also say that characteristics regarding symptoms depend on up bringing social and mental differences as well.

Our study based on observation recorded in Mayo Hospital only. A study with higher number of patients in a community may be conducted so that the modifiable risk factors be identified and commonest area of myocardium involved and the commonest mode of presentation may be observed. Patients should be advised for lifestyle modification to control the disease and outcome.

Conclusion

Anterior wall was the commonest wall of heart involved in acute myocardial infarction in patients presenting to Mayo Hospital. 70% patients presented with typical chest pain. It should be regarded as the most important symptom by primary care physician as they are the first to receive the patient. The most important risk factor was smoking. Luckily it is modifiable and efforts should be make to discourage smoking.

References

1. Haq h, Kiyani AM. The prevalence of hyperlipidemia in patients suffering from coronary artery deseasae. Pak J Cardiol 1999;10:9-14.
2. Memon MA. Abdus Samad. Acute myocardial infarction in women (prospective study from a developing country: Pakistan. Pak J Cardiol 1999:10:95-107.
3. Burns DK, Kumar V. The heart. In: Kumar V: Cotran RS. Robbins SL. Basic pathology. 6th ed. Philadelphia: WB Saunders: 1997:308-39.

4. Akhwand SA, Abdul Sattar, Aziz-ur-Rehman. Efficacy in giving timely thrombolytic therapy in patients of acute myocardial infarction in Mayo hospital, Lahore. Pak J Cardiol 2000;11(2-3):45-50.

5. Saleem A. Myocardial infarction and risk factors. Specialist 1998;14(4):285-90.

6. Witztum JL, Steinberg D. Disorders of lipid metabolism. In: Bennet JC, Plum F, editors medicine. 20th ed. Philadelphia: WB Saunders, 1996:1086-95.

7. Kannel WB. Lipid, diabetes and coronary heart disease; insight from the Framingham Study. Am Heart J. 1985; 110:11-7.

8. Camm AJ. Cardiovascular disease. In: Kumar P, Klark M, editors. Clinical Medicine. 5th ed. Edinburgh; WB Saunders. 2002:701-832.

9. Punit S. Kevin P Moore. Diagnosis of acute myocardial infarction. In: Oxford hand book of acute medicine. 5th ed. New York, Oxford University Press; 2000:15.

10. Verma Y, Sharma R, Yadav BS, Gupta R, Singh G. Incidence and prognostic significance of acute myocardial infarction presenting with RBBB and effect of thrombolysis. Indian Heart J 2001; 53; 582.

11. Mc Pherson DD, Horacek BM, Johnstone DE. Q-wave infarction: Pathophysiology of body surface potential map and ventriculographic patterns in anterior and inferior groups. Can J Cardiol 1986 Jul;Suppl A:91A-98A.

12. Akbar AM, Nadeem MA, Waseem T. Right ventricular involvement in inferior wall infarction: Incidence, Clinical spectrum and In-Hospital outcome. Pakistan's J Med Sci. June 1999;5(2):152-5.

13. Tahirkheli Nk, Edwards WD, Nishimura Ram,Holmes DR Jr. Right ventricular infarction associated with anteroseptal myocardial infarction. Cardiovasc Pathol. 2000 May-June;9(3):175-9.

14. Saleem A. Myocardial infarction in patients aged 35 and below. Pakistan's J Med Sci. July 1998; 14(4): 285-90.

15. Raza MA, Azeem M, Barias N. Acute myocardial infarction: Comparison of clinical characteristics, treatment and early outcome among women and men. Pak J Med Sci. July 2000: 16(4) 207-15.