Clinical Features and Angiographic Features in Patients with Myocardial Infarction in Young

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Abstract

Introduction: Myocardial infarction (MI)[1] is an important disease entity in developed nations and recently in developing nations[2] particularly in India in terms of mortality. It usually effects the middle and older age groups. However, recently the incidence in younger individuals is also increasing.

Aims and Objectives: To study the age, sex incidence risk factor and clinical presentation, clinical and laboratory profile, electrocardiography and echocardiographic evidence of patients with myocardial infarction in patients below 40 years. To study the angiographic profile of myocardial infarction in young.

Materials and Methods: This is a cross sectional study conducted upon a sample size of 54 patients.The study group consisted of patients aged below 40 years presented with myocardial infarction attending to Department of Cardiology, Mamata General Hospital, Khammam, during the period from October 2019 to March 2020.

Results: Incidence of myocardial infarction increases with increase in age. In our study 68.5% of the patients were in the age group of 35–40 years, in females it was observed that the coronary artery disease started 10 years later than in males and the incidence increases towards menopause. Chest pain was most common symptom followed by SOB. Hypertension and diabetes were also the associated factors.

Conclusions: Most common age group affected was between 36 to 40 years with most common symptoms being chest pain, common cardiovascular sign was hypertension. Risk factors analyses proved that smoking was the single most important risk factor for myocardial infarction. Majority of patients with myocardial infarction had dyslipidemia. Family history of myocardial infarction is an important risk factors contributing to myocardial infarction in young individuals.

Keywords: Angiographic features; Myocardial features; Young patients.

Introduction

Myocardial infarction (MI)[1] is an important disease entity in developed nations and recently in developing nations[2] particularly in India in terms of mortality. It usually effects the middle and older age groups. However, recently the incidence in younger individuals is also increasing. The risk factors, clinical features, complications and prognosis of Myocardial infarction in younger individuals differ in many aspects from those in elderly individuals.

The present study is focused on risk factor profile, Clinical course and prognosis of younger individuals presented with acute myocardial infarction.

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Aims of the Study

1. To study the age and sex incidence in patients with myocardial infarction below 40 years.
2. Study the risk factors and clinical presentation in patients with myocardial infarction below 40 years.
3. To study the clinical, laboratory profile, electrocardiography and echocardiographic evidence of with myocardial infarction in patients below 40 years.
4. To study the angiographic profile of myocardial infarction in young.

Materials and Methods

The study group consisted of patients aged below 40 years presented with myocardial infarction attending to department of cardiology, Mamata General Hospital, Khammam, during the period from October 2019 to march 2020.

54 patients were selected for this study who are less than 40 years during the study period. Patients suffering from severe from severe anemia, valvular heart disease were excluded. The parameters that were taken for the diagnosis of various subsets in them were clinical features, laboratory, and ECG, Echocardiographic and Angiographic findings.

Observations

In this study the clinical symptoms like chest pain and its association with sweating, nausea, vomiting, breathlessness and palpitation were all taken into account and the percentage of each was studied.

Physical signs like hypertension, hypotension, raised JVP, edema, S3, S4 and crackers, wheeze were all looked for. Patients were grouped into three categories according to their age as < 20 years, 21–30 years and 31–40 years. A detailed family history, socioeconomic status, occupation, diet and lifestyle were obtained. BMI was calculated by using wt/ht 2 and weight/hip ratio was calculated. Questionnaire for personality traits was asked and patients were categorized into type A and type B.

Statistical Software: The statistical software namely SAS 9.2 , SPSS 15.0, STATA 10.1, med calc 9.0.1, systat 12.0 and Rnenvironment ver. 2.11.1 were used for the analysis of the data and Microsoft word and excel have been used to generate graphs, tables etc.

Results

Table 1: Age distribution of patients studied.

Age in years	No. of patients	%
<20	2	3.7
21–30	15	27.8
31–40	37	68.5
Total	54	100.0

Mean+ SD: 33.65+ 6.06

Incidence of myocardial infarction increases with increase in age. In our study 68.5% of the patients were in the age group of 35–40, 27.8% patients belong to age group 21–30 and 3.7% patients belong to age group below 20 (Table 1).

Table 2: Gender distribution of patients studied.

Gender	No of patients	%
Female	8	14.8
Male	46	85.2
Total	54	100.0

Out of the 54 cases under study 46 were males and 8 were females (Table 2).

Table 3: Age distribution of patients studied.

Age in years	Gender		Total
	Female	Male	
<20	0	2 (4.3%)	2 (3.7%)
21–30	2 (25%)	13 (28.3%)	15 (27.8%)
31–40	6 (75%)	31 (67.4%)	37 (68.5%)
Total	8 (100%)	46 (100%)	54 (100%)

In females it was observed that the coronary artery disease started 10 years later than in male and the incidence increases towards menopause.

Their mean age was 36.66+ 4.17 years; females were older to their male counterparts. Most of them belonged to the 35–40 years age group (75%) (Table 3).

Table 4: Income distribution of patients studied.

Income	Gender		Total
	Female	Male	
Low	6 (75%)	32 (69.6%)	38 (70.4%)
Middle	2 (25%)	14 (30.4%)	16 (29.6%)
Total	8 (100%)	46 (100%)	54 (100%)

38 patients belonged to low income group (Table 4).

Table 5: Background of patients studied.

Background	Gender		Total
	Female	Male	
Rural	6 (75%)	28 (60.9%)	34 (63%)
Urban	2 (25%)	18 (39.1%)	20 (37%)
Total	8 (100%)	46 (100%)	54 (100%)

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28 patients belonged to rural area and 20 patients to urban area (Table 5).

Table 6: WP of patients studied.

WP	No. of patients	%
<12	36	66.7
12–30	13	24.1
>30	5	9.3
Total	**54**	**100.0**

36 patients reached hospital in 12 hours (Table 6).

Table 7: Diagnosis of patients studied.

Diagnosis	Gender		Total
	Female	**Male**	
Nil	5 (62.5%)	23 (50.0%)	28 (51.8%)
STK	3 (37.5%)	22 (47.8%)	25 (46.3%)
Tenectaplase	0 (0%)	1 (2.2%)	1 (1.9%)
Total	**8 (100%)**	**46 (100%)**	**54 (100%)**

22 patient's thrombolysed with STK, and 1 patient thrombolysed with tenectaplase (Table 7).

Table 8: Clinical symptoms and history in patients studied.

	Gender		Total (n=54)
	Female (n=8)	**Male (n=46)**	
Chest pain	7 (87.5%)	41 (91.1%)	48 (90.6%)
SOB	4 (50%)	25 (55.6%)	29 (54.7%)
Palpitations	0 (0%)	8 (17.8%)	8 (15.1%)
Syncope	0 (0%)	1 (2.2%)	1 (1.9%)
Edema	0 (0%)	1 (2.2%)	1 (1.9%)
Hypertension	4 (50%)	13 (28.9%)	17 (32.1%)
Diabetes mellitus	2 (25%)	4 (8.9%)	6 (11.3%)
HLP	3 (37.5%)	2 (4.4%)	5 (9.4%)
Family history	6 (75%)	27 (60%)	33 (62.3%)
Smoker	0 (0%)	38 (84.4%)	38 (71.7%)
Smoking index	0 (0%)	6 (13.3%)	6 (11.3%)
Personality	6 (75%)	37 (82.2%)	43 (81.1%)
Alcoholic	0 (0%)	26 (57.8%)	26 (49.1%)
Drug abuse	0 (0%)	1 (2.2%)	1 (1.9%)

Chest pain was most common symptom followed by SOB. Hypertension was present in 17 patients and diabetes patients were 6 in our study. Smoking was present in 38 patients and 33 patients had family history. Alcoholic history was seen in 26 patients and drug abuse in 1 patient (Table 8).

Table 9: CAG findings of patients studied.

CAG	No. of patients	%
Normal	28	51.9
Single vessel disease	16	29.6
Two vessel disease	10	18.5
Total	**54**	**100.0**

28 patients had normal angiogram. Single vessel disease was present in 16 patients. Two vessel disease in 10 patients and none of the patients had triple vessel disease (Table 9).

Discussion

In this study of clinical spectrum and risk factors in the young myocardial infarction patients, the commonest symptom was chest pain and commonest sign was hypertension. Risk factor analysis showed that smoking, hypercholesterolemia, positive family history, hypertension, obesity were frequently associated with young myocardial infarction patients. We are comparing the results of the study with the previous studies.

Presenting Symptoms and Signs

In our study most common presenting symptom was chest pain (Table 8). Other angina equivalents accounted for 10% of presentation. In our study 14% of patients were diabetic. Almost all the diabetic patients presented with angina equivalents. Similar observations have been made in other studies also i.e.; Mrgollin Jn Kinnel WB[3], Fienleich M et. al. (23%) Clinical features of recognized MI silent and symptomatic in AMJ. Cardial 1973; 32:1.

The most common cardiovascular sign was hypertension (32%) similar observations have been made in other studies also i.e.; Marty[4] AK Das AK et. al. (41%), Nitter Hugh[5] et. al. (24%), Dwivedi[6] et. al. (51.42%) studies.

Risk Factors: Smoking, Hypercholesterolemia, Family History, Age Sex Ratio, Hypertension, Psychosocial stress, Obesity, Diabetes Mellitus and Coronary artery anatomy.

Conclusion

The following are conclusions that could be inferred from this study on the clinical spectrum and risk factors among young myocardial infarction.

- The most common symptoms was chest pain.

- The most common cardiovascular sign was hypertension.

- Most of the patients belonged to killip's classification – 1.

- Most common age group affected was between 36 to 40 years showing that risk of myocardial infarction increase proportionately with increasing age (Table 3).

- Males were commonly affected especially in the younger age group. Significantly major risk factors like smoking, psychological stress, and hypertension were also evident among men

as compared to women. These factors along with hormonal factors contribute the higher proportion of myocardial infarction in young males.

- Females showed an increased risk of myocardial infarction towards the later stages of life presumably due to hormonal factors.

- Risk factors analyses proved that smoking was the single most important risk factor for myocardial infarction (Table 8).

- Majority of patients with myocardial infarction had dyslipidemia.

- Family history of myocardial infarction is an important risk factors contributing to myocardial infarction in young individuals. This is probably due to an interplay of both genetic and environmental factors.

- Hypertension was closely related with risk of myocardial infarction.

- Obesity was an important risk factor in young myocardial infarction patients probably due to the increasing incidence of sedentary life style.

- The incidence of diabetes mellitus in young myocardial infarction patients was comparatively less than incidence of their risk factors.

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