

Study of Etiology of Myocardial Infarction in Young and Old Males of Telangana**Reyya Mohan Sundar¹, Makandar U.K.²**¹Associate Professor, Department of Physiology, TRR Institute of Medical Sciences, Inole, Patancheru (Mandal), Sangareddy (District)-502319, Telangana State, India²Professor, Department of Anatomy, Al-Ameen Medical College, Vijayapur-586108, Karnataka, India

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Conflict of interest: Nil

Abstract**Background:** Cardiovascular disease (CVD) is the leading cause of death in young and old patients due to myocardial infarction (MI). The risk factors and etiologies must be evaluated for definitive treatment.**Method:** 90 (Ninty) young and old patients with a confirmed diagnosis of MI were studied, and physical examination was as per Killip's classification. ECG and angiography were tools to diagnose the condition of MI. Elevated lipid profile, CPKMB, Trop-T, and new modalities of imaging were also used.**Results:** The major group was 41-50, 26 (28.8%), followed by 22 (24.4%) in 36-40 years of age and 2 (2.20%), in 21-25 years of age. In clinical manifestation 78 (86.6%) had chest pain, followed by 44 (48.8%) perspiration, 14 (15.5%) palpitations, and 18 (20%) vomiting. In the signs, 38 (42.2%) had tachypnea, and 24 (26.6%) had hypertension, and 56 (62.2%) had the 1st classification of Killips. The rate of infarction was highest in 48 (53.3%) anterior septal, followed by 46 (51%) anterolateral. Elevation of ST wave in 80 (88.8%).**Conclusion:** The clinical study suggests risk factors of MI in adults and old age due to type-II DM, smoking, sedentary life (obesity), and hypertension, which have elevated ST waves, which is a bad prognosis, as it leads to premature mortality.**Keywords:** Angiography, Troponin, CPK-MB, Coronary ultrasound, ST segment, ECG, Killips classification.**DOI:** 10.25258/ijcpr.18.8.168

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Introduction

Pathologist believed that coronary arteries were end arteries and that occlusion must lead to sudden death. This belief was perpetuated by Sir Wiliam Osler by defining that symptoms of coronary arteries are not very characteristic it is only rarely diagnosed during life [1].

Ischemic heart disease (IHD) has diverse spectrum with common factor being an imbalance between myocardial oxygen supply and demand [2]. This imbalance is usually related to either an absolute reduction in coronary blood flow or an inability to increase coronary blood flow relative to the needs of the heart and is most often due to coronary arteries. Myocardial infarction in together with sudden cardiac death and angina pectoris is one of the three major manifestations of coronary artery disease (CAD). Traditionally CAD is considered to be a disease of the elderly. The cutoff age of 45 years has been used in the most of the studies to define young patients with CAD or an acute myocardial infarction (AMI) patients subgroups ≤ 35 years with CAD are at times referred to as very

young [3]. It is previously reported that patients with ST elevation MI took much longer time to reach the medical aid [4] hence fewer patients received definitive treatment for myocardial infarction in India. Hence an attempt is made to study the etiology of MI in young and old males.

Material and Method

90 (Ninty) male patients having MI admitted at TRR institute of Medical Sciences, Inole, Sangareddy (District), Telangana State were studied.

Inclusion Criteria: Male patients of different age groups, young and old (20 to >50 years), with definite evidence of acute MI. The patients who gave their consent in writing for study were selected.

Exclusion Criteria: The patients already under treatment for cardiovascular disease, renal disease, and undergone bypass surgery hypothyroidism were excluded from the study.

Method: As per WHO guidelines, the diagnosis of myocardial infarction depends on the following

- Typical chest pain.
- ECG changes with development of bundle block or ST segment elevation or depression of a least 0.1% MV for 24 hours
- Increased cardiac enzyme (creatinine phosphokinase, Troponines)

Hyperactive Phase:

1. ST segment elevation, tall and widened T waves
2. Reciprocal ST segment depression

Evolved Phase: Pathological Q waves duration 0.04 sec or more and amplitude 4mm or more or >25% of respective 'R' wave

Localization of AMI:

Anterior Wall:

- Anteroseptal infarction pattern in V1 to V4
- Antero lateral infarction pattern I, avL, V5 to V6
- Extensive/Trans anterior wall combination of both

Inferior wall: II, III and avF posterior wall – along with inferior wall tall T Waves in V1 and V2.

Sub-endocardial: Deep symmetrical, arrow head and inverted T waves.

R V infarction: ST elevation of >1mm in V₃R and V₄R in association with inferior wall changes R with ST depression and tall T waves in V₁ and V₂.

Past history of coronary artery disease, socio-economic status, family history of CAD (coronary artery disease) physical and clinical examination was carried out in every patient physical examination of acute MI was done as per the Killip's classification-

Killip Classification	Symptoms and Sign	Predicted mortality
I	No sign of pulmonary or Venous congestion	85-95%
II	S3 gallop, RVF, Tachypnoea, rales at the lung bases	0-5%
III	Severe heart failure pulmonary edema	10-20%
IV	Shock cyanosis, cold extremities, confusion, oliguria	35-45%

Every patient undergone ECG studies and angiographic evaluation if needed

Duration of study was from August 2025 to July 2026.

Statistical Analysis: Various parameters like age distribution grades of physical activity, clinical manifestation, sites of MI were classified with percentage. The statistical analysis was carried out SPSS software.

Observation and Results

Table 1: Distribution of age in Myocardial infarction patients:

- Age in years: 2 (2.2%) 21-25 years, 6 (6.6%) 26-30 years, 14 (15.5%) 31-35 years. 22 (24.4%) 36-40 years, 26 (28.8%) 41-50 years, 20 (22.2%) > 50 years of age.

Table 2:

Study of grades of physical activity in male patients of MI 18 (20%) grade-I, 32 (35.5%) grade-II, 30 (33.3%) grade-III, 10 (11.1%) grade-IV

Table 3:

- Symptoms – 78 (86.6%) chest pain, 18 (20%) breathlessness, 44 (48.8%) perspiration, 14 (15.5%) palpitation, 2 (2.2%) syncope, 18 (20%) vomiting, 12 (13.3%) apprehension, 6 (6.6%) cold extremities, 7 (7.7%) Cough.

- Signs – 14 (15.5%) tachycardia, 6 (6.6%) bradycardia, 38 (42.2%) tachypnoea, 24 (26.6%) hypertensive, 2 (2.2%) not recordable, 14 (15.5%) jugular venous elevation, 6 (6.6%) cyanosis.
- Killips Class – 56 (62.2%) I, 20 (22.2%) II, 8 (8.8%) III, 6 (6.6%) IV

Table 4: Study of site of infarction ST segment and lipoprotein level in the male patients

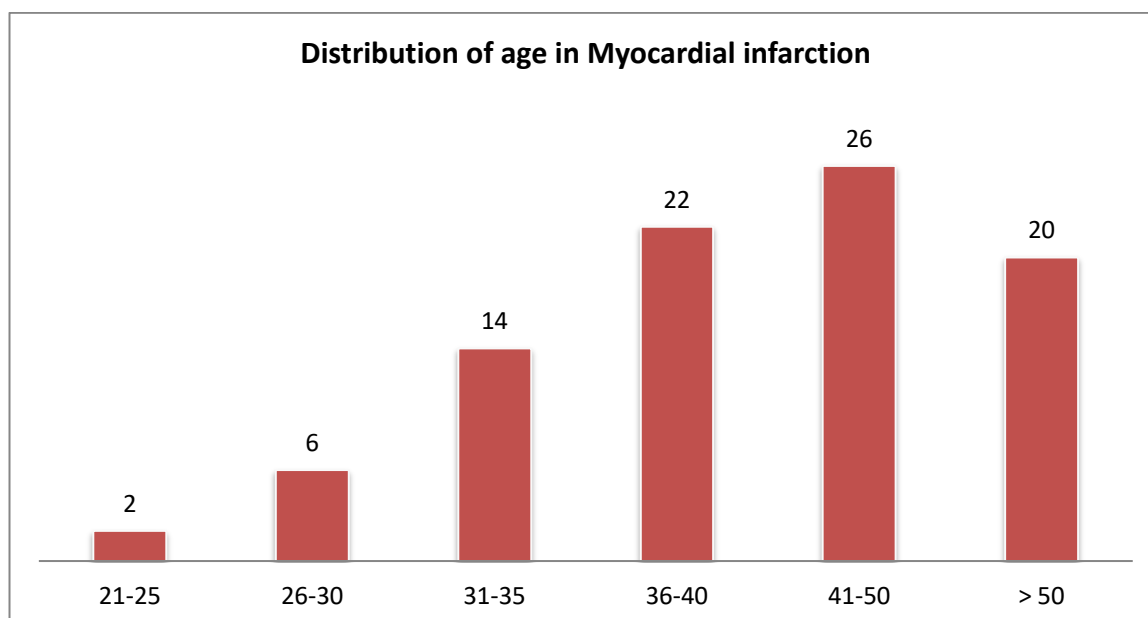
- Wall of ventricle: 48 (53.3%) antero-spetal, 46 (51.1%) antero-lateral, 34 (37.7%) inferior, 6 (6.6%) Inferior+posterior, 6 (6.6%) Inferior + RV
- ST Segment: 10 (11.1%) ST depression, 80 (88.8%) ST elevation

Table 5: Risk factors associated with MI patients

- Conventional – 50 (55.5%) smoking, 12 (13.8%) type-II DM, 24 (26.6%) hypertension, 34 (37.7%) alcoholism, 26 (28.8%) family history of IHD, 40 (44.4%) obesity.
- Lipoprotien – 46 (51.1%) hypercholesteremia, 28 (31.1%) hypertrygly ceridemia, 28 (31.1%) HDL (< 35 mg %), 50 (55.5%) LDL (> 130 mg %).
- Newer risk factors: 32 (35.5%) type A personality 2 (2.2%) increased LP (a), 2 (2.2%) hyper homocystenemia, 3 (2.2%) protein c deficiency, 4 (4.4%) structural aortic disease.

Table 1: Distribution of age in Myocardial infarction (90 Male patients)

Age in years	Number of patients	Percentage %
21-25	2	2.20%
26-30	6	6.6%
31-35	14	15.5%
36-40	22	24.4%
41-50	26	28.8%
> 50	20	22.2%

**Figure 1: Distribution of age in Myocardial infarction****Table 2: Study of grades of physical activity in male MI patients**

Grades of physical activity	Number of patients	Percentage %
I	18	20.0%
II	32	35.5%
III	30	33.3%
IV	10	11.1%

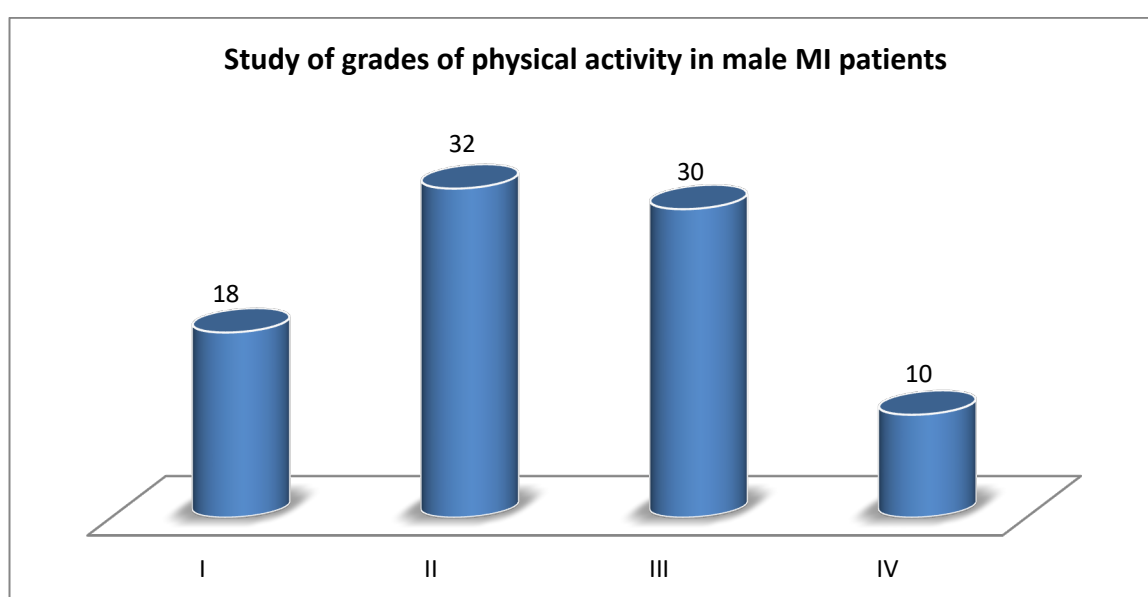
**Figure 2: Study of grades of physical activity in male MI patients**

Table 3: Clinical manifestation of the MI patients

1. Symptoms	Number of patients	Percentage %
Chest pain	78	86.6%
Breathlessness	18	20%
Perspiration	44	48.8%
Palpitation	14	15.5%
Syncope	2	2.2%
Vomiting	18	20%
Apprehension	12	13.3%
Cold Extremities	6	6.6%
Cough	7	7.7%
2. Signs	Number of patients	Percentage %
Tachycardia	14	15.5%
Bradycardia	6	6.6%
Tachypnoea	38	42.2%
Hypertensive	24	26.6%
Not recordable	2	2.2%
Jugural venous pressure elevation	14	15.5%
Cynosis	6	6.6%
3. Killips Class	Number of patients	Percentage %
I	56	62.2%
II	20	22.2%
III	8	8.8%
IV	6	6.6%

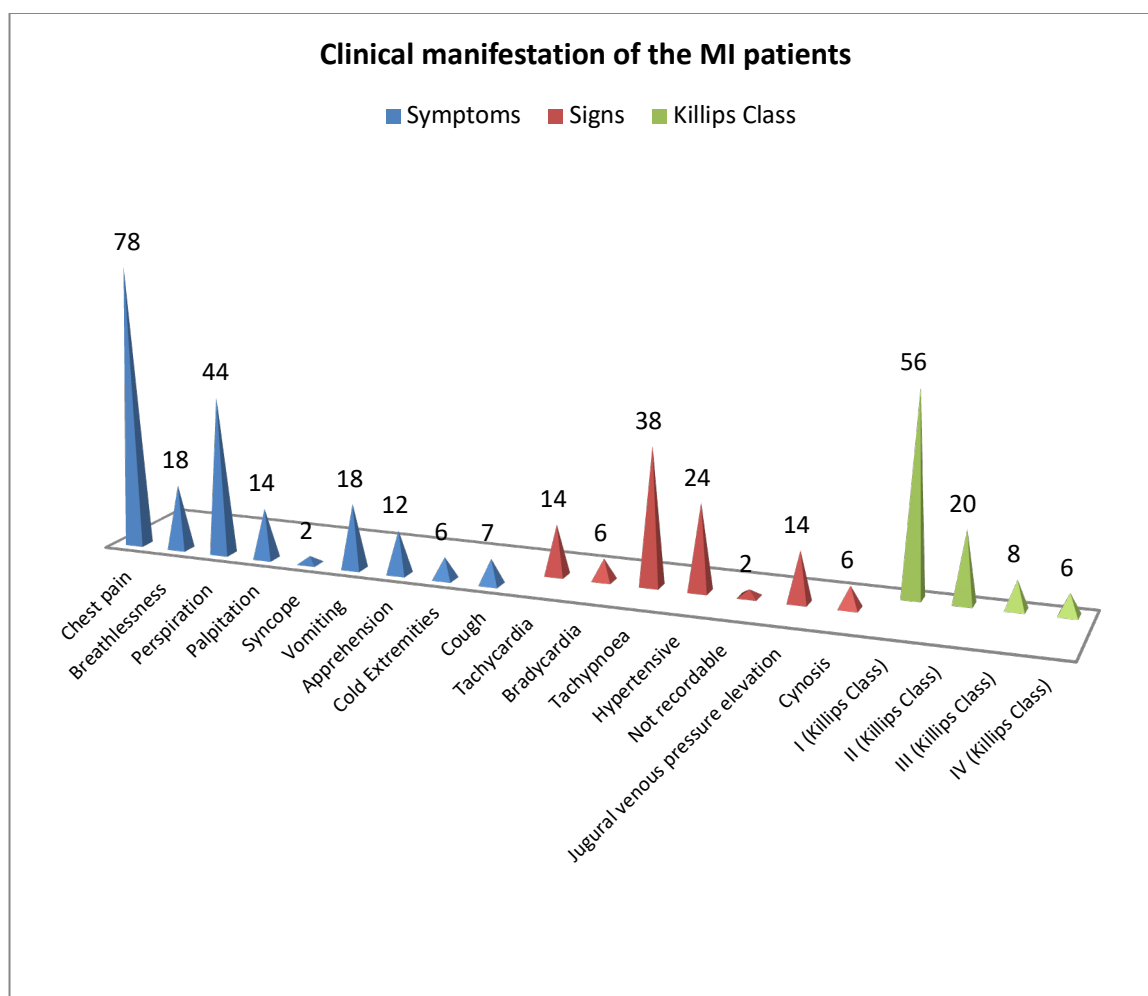
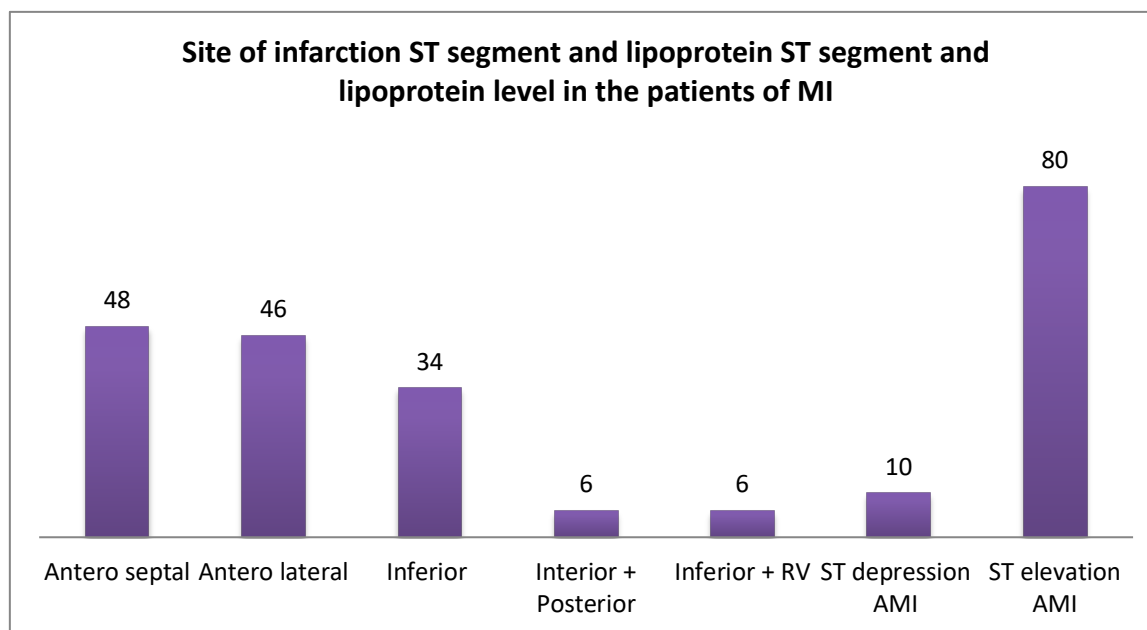
**Figure 3: Clinical manifestation of the MI patients**

Table 4: Site of infarction ST segment and lipoprotein ST segment and lipoprotein level in the patients of MI

Presentation	Number of patients	Percentage %
(A) Wall of ventricle		
Antero septal	48	53.3%
Antero lateral	46	51.1%
Inferior	34	37.7%
Interior + Posterior	6	6.6%
Inferior + RV	6	6.6%
(B) Wall of ventricle		
ST depression AMI	10	11.1%
ST elevation AMI	80	88.8%

**Figure 4: Site of infarction ST segment and lipoprotein ST segment and lipoprotein level in the patients of MI****Table 5: Risk factors associated with MI patients (No. of patients: 90 Males)**

Risk factors	Number of patients	Percentage %
(A) Conventional		
Smoking	50	55.5
Diabetes Mellitus	12	13.3
Hypertension	24	26.6
Alcoholism	34	37.7
Family history of IHD	26	28.8
Obesity	40	44.4
(B) Lipoprotein		
Hypercholesterolemia (TG >200 mg %)	46	51.1
Hypertriglyceridemia (TG >200 mg %)	28	31.1
HDL (< 35 mg %)	28	31.1
LDL (> 130 mg %)	50	55.5
(C) Newer Risk factors		
Type A personality	32	35.5
Increased LP (a)	2	2.2
Hyperhomocysteinemia	2	2.2
Protein C deficiency	2	2.2
Structural aortic disease	4	4.4

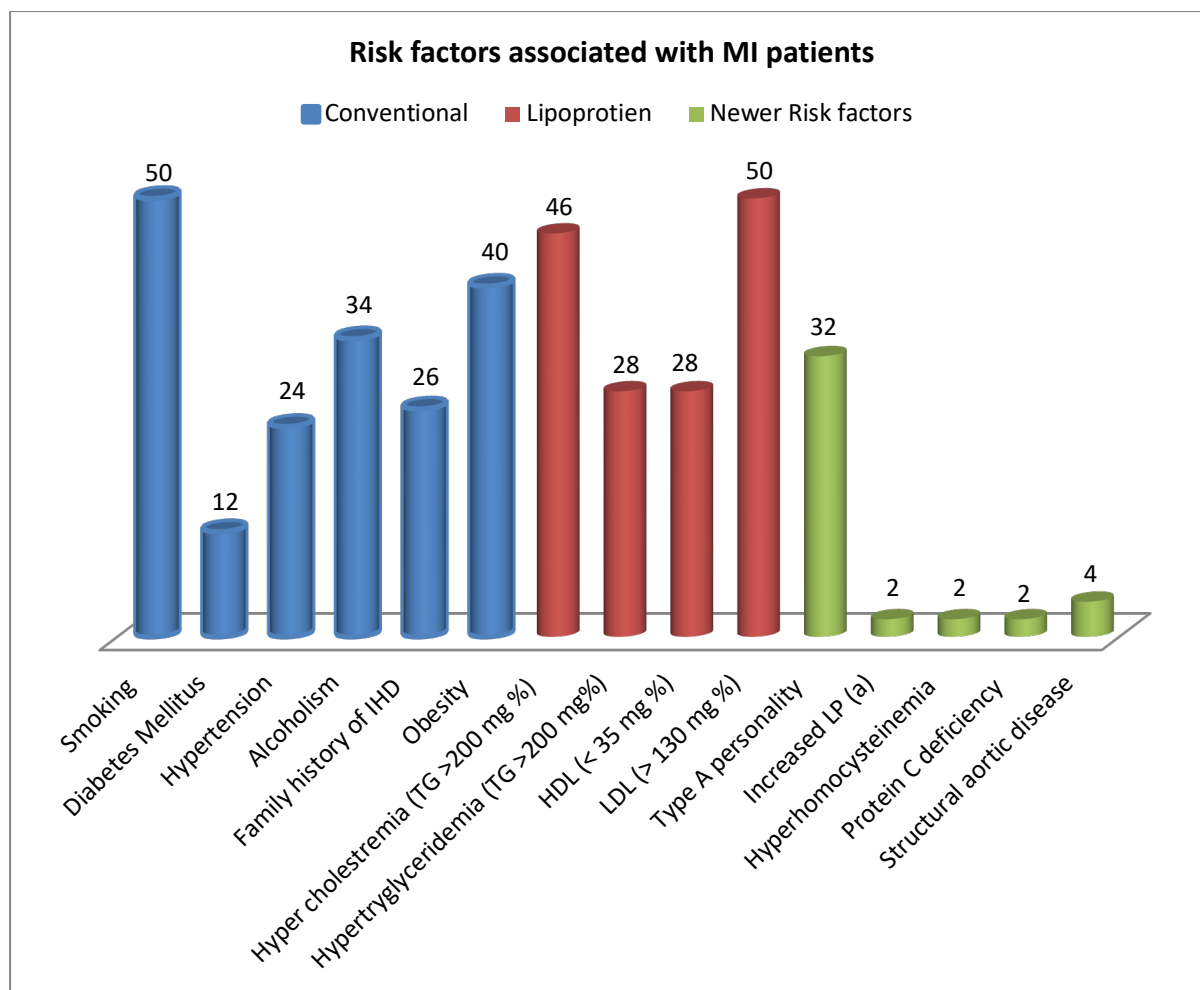


Figure 5: Risk factors associated with MI patients

Discussion

Etiology of myocardial infarction (MI) in young and old males of the Telangana State population. The distribution of age in MI patients. The highest number was 26 (28.8%) in the 41-50 years of age group, followed by 22 (24.4%) in 36-40 years of age group; above 50 (> 50) were 20 (22.2%) and least were 2 (2.2%) in 21-25 years of age (Table 1). In the grades of physical activities the highest number was 32 (35.5%) grade-II, followed by 30 (33%) in grade-III, and 10 (11%) were grade-IV (Table 2). In the study of clinical manifestations, 78 (86.6%) had chest pain, followed by 44 (48.8%) perspiration, and the least was 2 (2.2%) syncope.

In the study of signs – 38 (42.2%) had tachypnea, followed by 24 (26.6%) hypertensive and 14 (15.5%) tachycardia and elevation of jugular venous pressure, and the least was 6 (6.6%) cyanosis grade-I Killip class (Table 3). The site of MI, ST segment, and lipoprotein level studies. The highest infarction was 48 (53.3%) in the anterior septal wall of ventricle anterior septal followed by 46 (51.1%) anterolateral, and least was 6 (6.6%) in the inferior + RV and inferior + posterior, 80 (88.4%) ST segment elevation (Table 4). Risk

factors associated were 50 (55.5%) smoking, 34 (37.7%) alcoholism, 40 (44.4%) obesity, 26 (28.8%) family history of IHD, 50 (55.5%) LDL, 46 (51.1%) hypercholesterolemia (Table 5). These findings are more or less in agreement with previous studies [5,6,7]. It is interesting to note that coronary artery disease (CAD) affects the Indian population at the younger age as compared with the western population. The reasons might include unhealthy food habits; addictions such as tobacco smoking or tobacco chewing; and psychosocial stress, which are more prevalent in young adults of middle and lower socioeconomic classes, as 85% Indian society belongs to the middle and lower classes. The modified risk factors diabetes mellitus, smoking, and obesity lead to higher levels of cholesterol and cause atherosclerosis. Atherosclerotic process [8] begins at birth and significant lesions in coronary arteries may be present at the age of 40-50 years. The atherosclerotic process is programmed by external influences during intra uterine growth, for example mother's hypercholesterolemia. It is also reported that, environmental influences on genotype may the development of coronary artery disease in young adults [9]. Premature ischemic heart disease in the

first degree relatives is recognized as an independent risk factor at the age of 40. Many proatherogenic genetic factors were discovered. E4 allele of the lipoprotein, E is an important risk factor for atherosclerosis and ischemic heart disease obesity doubles the risk of myocardial infarction in men and increases the risk in women 2.5 times [10].

Cocaine and amphetamine use is a factor associated with an increasing number of myocardial infarction by increasing sympathetic output and increase in coronary artery spasm and triggering coronary artery thrombosis spontaneous coronary artery thrombosis occurs secondary to imbalance between coagulation and fibrinolytic process [11]. It is noted that, importance of many polymorphism of platelet receptors cycloproten 1b and 11b/11 la). The patients with polymorphism have six times greater risk of coronary artery thrombosis [12].

Summary and Conclusion

The present study of the etiology of MI in young and old males in Telangana State. The prevalence of MI is quite common in young adults between the ages of 36-40 and 41-50 than in old-age males. The coronary artery diseases have multifactorial etiologies. The present study demands further pathophysiological, immunological, nutritional, and and angiological studies because the exact mechanism and factors of embolism and infarction is still unclear.

Limitation of study: Owing to remote location of research centre, small number of patients, lack of latest techniques, we have limited findings and results.

This research work was approved by the ethical committee of TRR Institute of Medical Sciences, Inole, Patancheru (Mandal), Sangareddy (Distict) Telangana State-502319.

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