

## Study of Variations in Clinical Presentation and Risk Factors Of Ami In Young [<40yrs] In Rural Background

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**Abstract: Background** :Incidence of myocardial infarction among rural Indians is less than urban Indians despite higher rates of smoking in villages.The urbanisation has made its impact on the rising incidence of myocardial infarction in India.one should not however overlook the fact that myocardial infarction in rural areas of India has doubled as well.

**Aims and Objectives** :To study the variations in clinical presentation and risk factors in myocardial infarction in young.

**Materials and Methods** :This prospective observational study was done in General Medicine department at SVS hospital during July 2007 to July 2009.Out of 100 patients admitted with MI 20 selected and studied based on the inclusion and exclusion criteria.

**Results** :In the enrolled patients chest pain was the prominent symptom present in all the patients while smoking was the major risk factor for the myocardial event.

**Conclusions** :The study shows that hypertension,diabetes and smoking do contribute to myocardial infarction even in rural background.

**Keywords**):chest pain,diabetes,hypertension,myocardial infarction,smoking

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### I. Introduction

Incidence of myocardial infarction among rural Indians is less than urban Indians despite higher rates of smoking in villages. The urbanization has made its impact on the rising incidence of MI in India. One should not however overlook the fact that MI in rural areas of India has doubled as well<sup>1</sup>.MI is a leading cause of mortality and morbidity in developed countries and is emerging as an epidemic in developing countries<sup>2</sup>.Manmi study<sup>3</sup> undertaken at Calicut Medical College in Kerala ,India showed that first heart attacks among patients younger than 40 years have increased 20 fold between 1971 and 1991.AMI has a high rate of morbidity, cost of hospitalisation and long term mortality<sup>4</sup>.Incidence of MI in United States is so high that >7 million people have sustained MI.A high fat and energy rich diet, smoking and sedentary lifestyle are associated with the emergence of MI<sup>5</sup>.In United States and Western Europe it is growing among low income groups rather than high income groups while primary prevention has delayed the disease to later in life in all socioeconomic groups. Obesity ,insulin resistance and type 2 diabetes are increasing and powerful risk factors of MI. Under the influence of risk factors the young population is more prone to risk of MI in comparison to old. Atherosclerosis of coronary arteries commonly cause MI<sup>5,6</sup>.Several nonatherosclerotic<sup>6</sup> CAD have recently gained importance including congenital anomalies, vasculitis, traumatic heart disease, coronary vasospasm. It requires a high index of suspicion in recognizing AMI in young people because of frequent non cardiac causes of chest pain occurring at that age.

### II. Materials and Methods

This prospective observational study was carried out on patients admitted with MI in Department of General Medicine at SVS hospital during July 2007 to July 2009.A total of 100 patients were admitted during this period out of whom 20 were selected based on inclusion and exclusion criteria.

**Study Design**: Prospective observational study

**Study Location**: the study was done in Department of Medicine at SVS hospital in Mahabubnagar.

**Study Duration**: July 2007 to July 2009

**Sample Size**: 20 patients

**Sample Size calculation**: The subjects were taken from patients admitted with MI during the period.

**Inclusion Criteria**:

1. Age less than 40 years
2. ST elevation >1mm in limb leads more than 2mm in chest leads which is present in two contiguous leads.

**Exclusion Criteria:**

1. Age more than 40 years
2. no ECG changes, no typical chest pain, normal cardiac enzyme
3. h/o previous MI

**Study Protocol:**

All patients initially admitted with chest pain were shifted to ICCU. They were subjected to a detailed history and physical examination with special reference to hypertension, diabetes, family history of angina/MI.

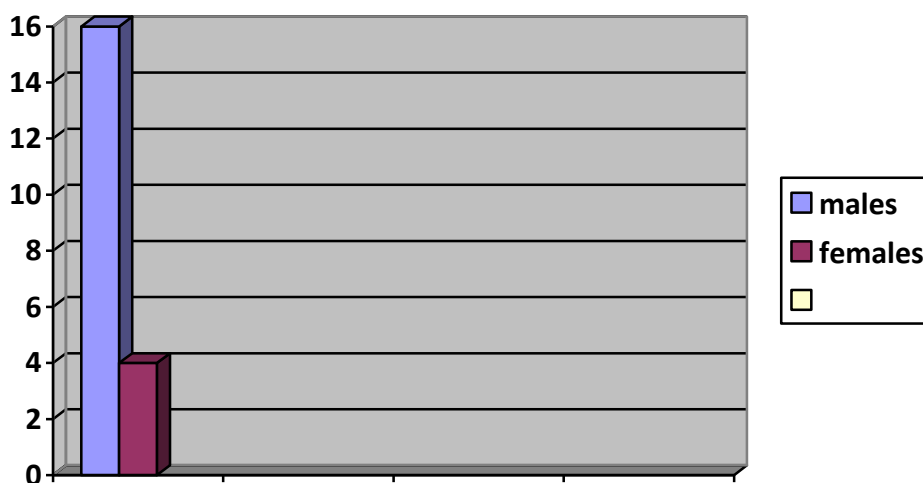
Routine investigations like CBP, ESR AND RBS were done after admission. An ECG was taken for every patient at arrival and hourly intervals thereafter for first 4 hrs. For those patients who underwent thrombolysis ECG was repeated half an hour after thrombolysis. Serum cardiac enzymes Creatine kinase [CK-MB] and Troponin I were evaluated in all patients at the time of admission. Serum lipid profile was done after the acute event. Considering the rising importance of risk factor micro-albuminuria urine samples were sent for evaluation. 24hr collection was done in patients. BMI was evaluated by taking the height and weight of the patients and calculating by the formula. Waist circumference was measured simultaneously. 2D echo was done in all cases admitted for chest pain in ICCU. As per the requirement coronary angiogram was advised.

**III. Results**

Out of the 20 patients male incidence was more with 16[80%] and females 4[20%] showing 4:1 preponderance. Males are affected more due to the risk factors.

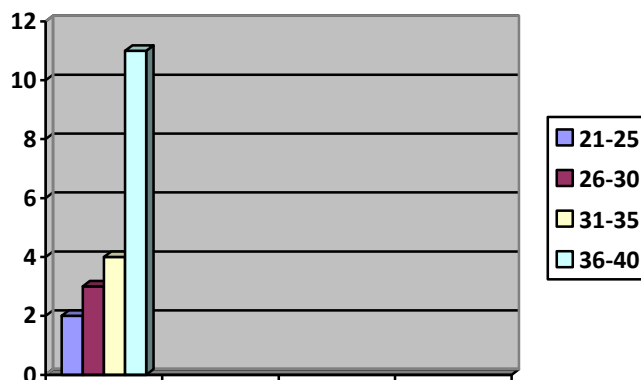
**Gender distribution**

Table 1



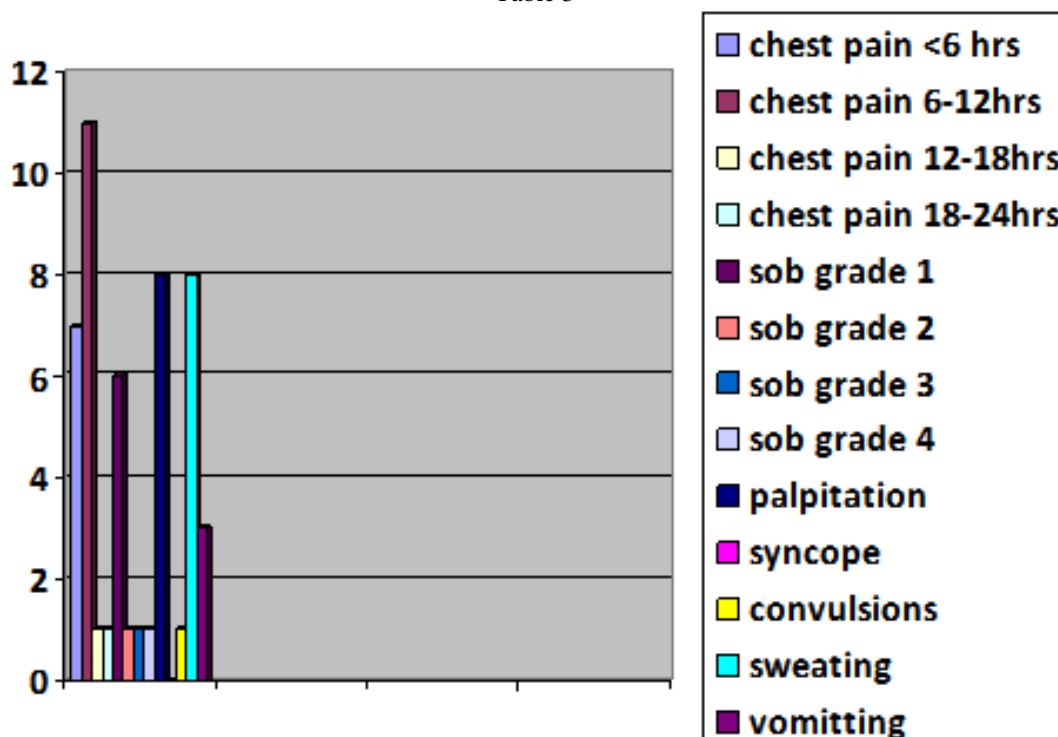
Of the 20 patients 75% are between 31-40 years and with inclination for 36-40 years[55% vs 20%]. The maximum number of patients are in age group 36-40[55%] years and least in between 21-25[10%]. The incidence is more between 31-40 year age groups.

AGE DISTRIBUTION  
Table 2



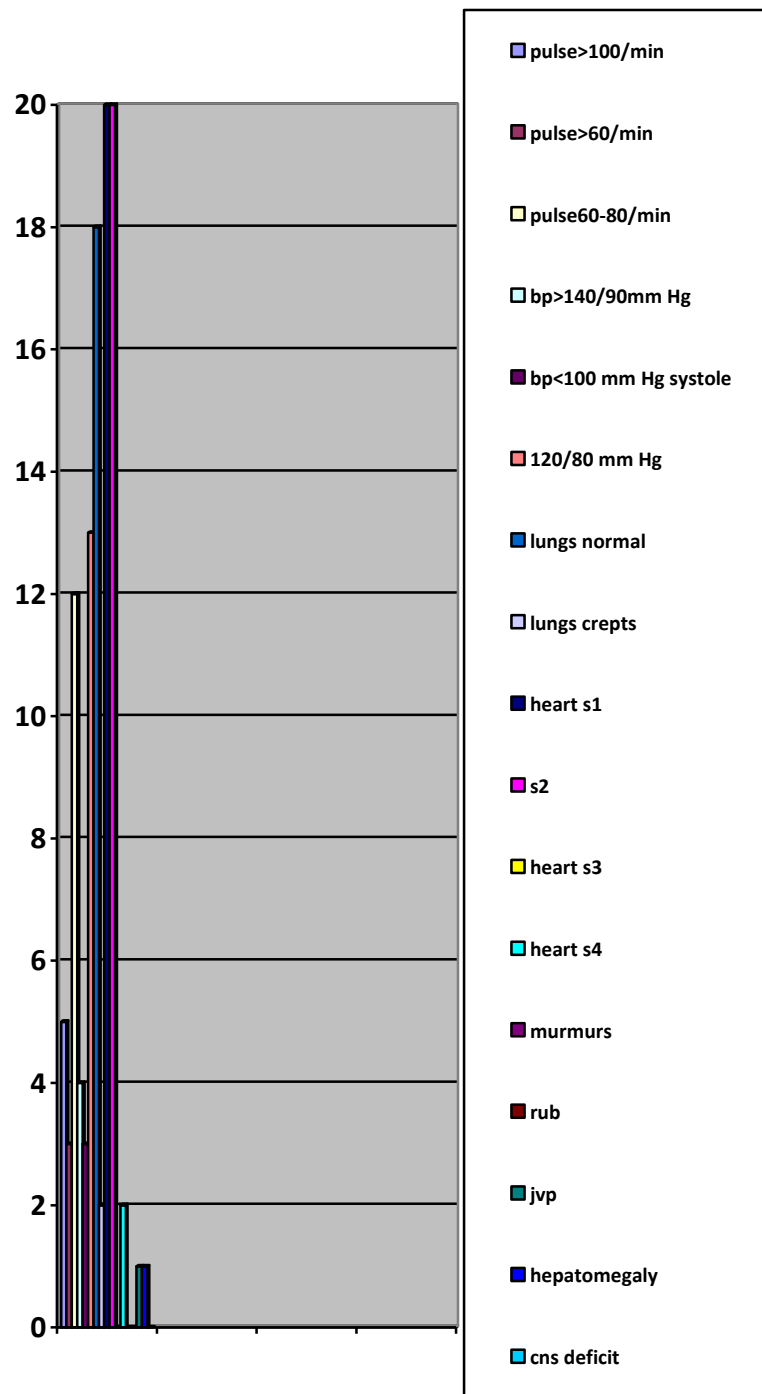
Of the 20 patients studied all [100%] had chest pain.7[35%] had chest pain less than 6 hrs.11[55%] had chest pain for 6to12 hrs.1[5%] had chest pain for 12 to 18 hrs.1[5%] had chest pain for 18to 24hrs.9[45%] had SOB at presentation. of them 6[30%] had grade 1 dyspnea.1[5%] had grade 2 dyspnea.1[5%] had grade 3 dyspnea.1[5%] had grade 4 dyspnea.8[40%] had palpitations.1[5%] had convulsions and none of them had syncopal attacks. Autonomic disturbances were present in 11[55%] of the patients. of which 8[40%] had sweating and 3[15%] had vomiting.

Percentage distribution of symptoms  
Table 3



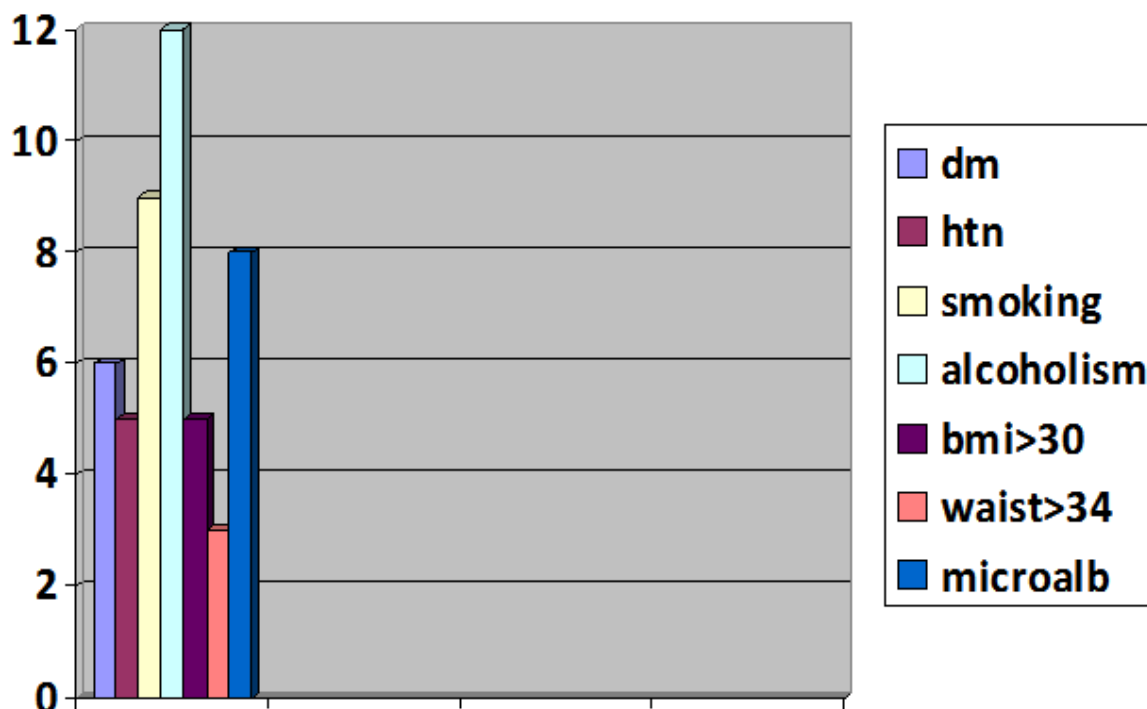
Of the 20 patients 5[25%] had tachycardia with rate more than 100/min and 3[15%] had bradycardia with rate less than 60.4[20%] had hypertension with a bp of greater than 140/90 mm hg and 3 [15%] had hypotension with systolic bp of less than 100mm of hg.2[10%] had crepts on auscultation.S4 gallop was present in 2[5%] of patients. There was no rubs and murmurs. JVP was raised in 1[5%] of patients. hepatomegaly was present in 1[5%] of patients. There were no patients with focal neurological deficit.

Percentage distribution of physical findings  
Table 4



Of the 20 patients 6[30%] were diabetic and 5[25%] were hypertensive. 9[45%] had smoking history and 12[60%] had alcoholism. In these patients there were 5[25%] whose BMI was  $>30$  AND 3[15%] whose waist circumference was  $>34$  inches. Microalbuminuria was positive in 8[40%] of the patients. In the patients who were diabetic, blood sugars were monitored and were treated with soluble insulin. Patients who were hypertensive, BP monitored and kept on antihypertensives as and when needed.

Distribution of risk factors  
Table 5



#### IV. Discussion

In the study of variations in clinical presentation and risk factors of AMI IN young [<40 years] in Rural Background, we have taken upper age limit as 40 years to assess the sensitivity of associated risk factors. Of the 100 patients 20 patients who were of age less than 40 years were enrolled in the study. The studies in relation to MI in young P. Jit Singh et al<sup>7</sup> had taken cut off age limit as 45 years. The maximum incidence in this study was between 36-40[55%] and least between 21-25[10%] in coincidence to 35-40 years age[45%] in Jit Singh et al study<sup>7</sup>.The male to female ratio was more compared to Jit Singh study<sup>7</sup>[4:1 Vs 3.2:1].100% of the patients in the study had chest pain at presentation of which 55% had chest pain with autonomic disturbances. This is strikingly dissimilar in those with MI in elderly where chest pain is present in only 75-80% with a significant proportion of patient having atypical chest pain .of the 20 patients studied all 100% had chest pain. Of them 7[35%] had chest pain less than 6 hrs.11[55%] had chest pain for 6-12 hrs.1[5%] had chest pain for 12 to18 hrs.1[5%] had chest pain for 18 to 24hrs.9[45%] had SOB at presentation. Of them 6[30%] had grade 1 dyspnea.1[5%] had grade 2 dyspnea.1[5%] had grade 3 dyspnea.1[5%] had grade 4 dyspnea.8[40%] had palpitations.1[5%] had convulsions and none of them had syncopal attacks. Autonomic disturbances were present in 11[55%] of the patients. Of which 8[40%] had sweatings and 3[15%] had vomitings. of the 20 patients 5[25%] had tachycardia with heart rate more than 100/min and 3[15%] had bradycardia with rate of less than 60.4[20%] patients had hypertension with a BP greater than 140/90 mm Hg and 3[15%] had hypotension with systolic BP of less than 100mm Hg. Of the number of patients 2[10%] had crepts on auscultation.S4 gallop was present in 2 [5%] of patients. There were no rubs and murmurs. JVP was raised in 1[5%] of patients. Hepatomegaly was present in 1[5%] of patients. There were no patients with focal neurological deficit.

Regarding the association of risk factors out of 20 patients 5[25%] had HTN in contrast to 37% in Remacle et al study<sup>8</sup>. 6[30%] had DM where as Remacle et al<sup>8</sup> had 7.4%.Smoking as risk factor significant to cause atherosclerosis [SI>100] was present in 9[45%] patients in contrast to 92.6% in Remacle et al study<sup>8</sup>.It is well known that vocational smoking causes angina and MI by a means of coronary vasospasm. If holiday smoking is also taken into account ,study shows an association to as close as 85% which means cigarette smoking is the predominant risk factor of MI even in young patients. Family history of sudden death was not present in any of the patients in contrast to 48.2% in Remacle et al study<sup>8</sup>.Significant alcoholism was present in 12[60%] patients in males in contrast to 22.2% in Remacle et al study<sup>8</sup>.In view of the importance of obesity<sup>9,10,11,12</sup> as the risk factor in MI,BMI and waist circumference were calculated. The studies showed that 5[25%] had BMI>30 and waist circumference of 3[15%] of patients was above 34 inches on physical

examination. In view of microalbuminuria<sup>13</sup> being risk factor in MI patients, it was estimated. In our study 84% of patients were found positive in contrast with 46% in Pontremoli et al study<sup>14</sup>.

## V. Conclusion

The present study shows that chest pain was the most common manifestation in MI in young with majority of the patients presenting with autonomic disturbances. It also shows that risk factors like Diabetes, Hypertension, smoking and alcoholism do contribute to the increased incidence of AMI in young even in Rural Background.

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