

# A STUDY OF THE CLINICAL AND ANGIOGRAPHIC PROFILE OF PATIENTS WITH ACUTE STEMI, THROMBOLYSED WITH STREPTOKINASE

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## ABSTRACT

### BACKGROUND

Cardiovascular diseases are leading causes of mortality and disease burden globally. In India, cardiovascular diseases have contributed to 28.1% of total deaths and 14.1% total DALYs with Ischemic Heart Disease responsible for 17.8% of total deaths and 8.7% of total DALYs. Both prevalence and mortality due to cardiovascular diseases are higher in South India. We wanted to study the clinical and angiographic profile of patients with acute STEMI, thrombolysed with STK.

### METHODS

Patients with acute STEMI attending the ICCU, Department of Cardiology, KGH, Visakhapatnam, were included in the study. Patients within the window period of 6 hours were thrombolysed with STK if no contraindications were present. For patients presenting later than 6 hours, thrombolysis was considered up to 24 hours if there was ongoing pain or persistent ST segment elevation. Coronary angiograms were performed within one week of hospital admission in all patients. Patients of acute coronary syndromes other than STEMI, patients with acute STEMI who presented late in the window period, and in whom thrombolysis was not considered, patients who presented with Acute STEMI and had contraindications to STK were excluded.

### RESULTS

The study group consisted of 396 subjects of which 342 (86.36%) were males and 54 (13.64%) were females. All the 5 subjects in the age group of 21-30 years were males. Out of the 63 subjects in the age group of 31-40 years, 54 (85.71%) were males and 9 (14.29%) were females. Out of the 155 subjects in the age group of 41-50 years, 141 (90.97%) were males and 14 (9.03%) were females. Out of the 104 subjects in the age group of 51-60 years, 88 (84.62%) were males and 16 (15.38%) were females. Out of the 9 subjects in the age group of 61-70 years, 54 (78.26%) were males and 15 (21.74%) were females.

### CONCLUSIONS

STEMI is more common in males in all age groups. 70% of patients presented within 6 hours after onset of pain. Patent Infarct Related Artery is seen more commonly in males, smokers and young patients. Most of the patients with patent Infarct Related Artery had preserved LV function with EF>50%. Thrombus in the IRA is seen more commonly in old patients > 50 years and in those who presented after 6 hours of onset of pain. Most of them had LV dysfunction. Significant coronary involvement is seen in old age, females, those who presented with late window period, diabetics and hypertensives.

### KEYWORDS

CAD, STEMI, Streptokinase, Thrombolysis, Angiographic Profile.

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### BACKGROUND

Cardiovascular diseases are leading causes of mortality and disease burden globally.<sup>1,2,3</sup> In India, cardiovascular diseases have contributed to 28.1% of total deaths and 14.1% total DALYs with Ischemic Heart Disease responsible for 17.8% of total deaths and 8.7% of total DALYs.<sup>1,2,3</sup> Both prevalence

and mortality due to Cardiovascular diseases are higher in South India.<sup>4</sup>

ST-elevation myocardial infarction (STEMI) is a clinical syndrome defined by characteristic symptoms of myocardial ischemia in association with persistent electrocardiographic ST elevation (STE) and subsequent release of biomarkers of myocardial necrosis.<sup>5</sup> Prompt and immediate restoration of blood flow in the infarct related artery is done either by primary percutaneous intervention or fibrinolysis.<sup>6</sup> This study was carried out with the objective to assess the clinical and angiographic profile of patients who were thrombolysed with streptokinase.

### Aims and Objectives

To study the clinical and angiographic profile of patients with acute STEMI, thrombolysed with STK.

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## METHODS

### Inclusion Criteria

Patients with Acute STEMI attending the ICCU, Department of Cardiology, KGH, Visakhapatnam, were taken into the study. Patients within the window period of 6 hours were thrombolysed with STK if no contraindications were present. For patients presenting later than 6 hours, thrombolysis was considered up to 24 hours if there was ongoing pain or persistent ST segment elevation. Coronary angiograms were performed within one week of hospital admission in all patients.

### Exclusion Criteria

Patients of Acute coronary syndromes other than STEMI, patients with Acute STEMI who presented late in the window period, and in whom thrombolysis was not considered, patients who presented with Acute STEMI and had contraindications to STK.

Various baseline characteristics studied include age and sex of the patients, window period, location of the infarction as anterior or inferior, presence of traditional risk factors like hypertension, diabetes, smoking, obesity, family history of CAD. The following baseline characteristics were studied-

- Age and sex.
- Window period: time since the onset of pain to presentation to ICCU.
- Location of infarction: Anterior vs. others.
- Risk factors
  - i. Hypertension<sup>7</sup>:  $\geq 140/90$  mmHg, on anti-hypertensive medication.
  - ii. Diabetes<sup>8</sup>: fasting plasma glucose  $\geq 126$  mg/dl, 2 hr post prandial glucose  $\geq 200$  mg/dl, symptoms of DM, random plasma glucose concentration  $\geq 200$  mg/dl, patients on treatment for diabetes mellitus.
  - iii. Smoking:<sup>9</sup> Current or past smokers (those who have quit within the past six months)
  - iv. Family History: CAD in first degree male relatives before the age 55 and in a first degree female relative before the age 65 years.
  - v. BMI<sup>10</sup>: The BMI is calculated by dividing the body weight in kilograms by the square of the height in meters. Patients with BMI of 25–29.9 were considered to be overweight, and those with BMI  $>30.0$  were considered as obese.
- 2D Echocardiography: All the echocardiograms were done on a LOGIC PRO Q GE echocardiography machine. The echocardiographic parameters evaluated included:
  - i. LV ejection fraction
  - ii. Assessment of regional wall motion abnormalities

Coronary angiograms were performed on all the patients within one week after thrombolysis. Informed consent was taken from all the patients. Coronary angiograms were analysed for the following characteristics-

1. Number of vessels involved

2. Severity of the lesion:

- a. Based on the percentage diameter stenosis of the involved artery compared to the normal reference segment
- b. Lesions are classified as severe if 70% or more diameter stenosis is observed in the LAD, LCX, RCA and more than or equal to 50% diameter stenosis in the LMCA

3. Patency of the infarct related artery as assessed by the TIMI flow

- a. TIMI grade 0: complete occlusion of the infarct related artery
- b. TIMI grade 1: some penetration of the contrast material beyond the point of obstruction but without perfusion of the distal coronary bed
- c. TIMI grade 2: perfusion of the entire infarct related artery into the distal vessel but with delayed flow compared with the normal artery
- d. TIMI grade 3: full perfusion of the infarct related artery with normal flow

4. Presence or absence of thrombus: identified by the appearance of discrete intra luminal filling defects within the arterial lumen.

### Statistical Analysis

The observations were recorded in a proforma created for this purpose and entered in the master chart created using Microsoft Excel 2003 version. The results were presented in the form of tables and charts and expressed as proportions and percentages. Statistical Analysis was done using Epi Info 6 software. Mean, median, standard deviation and Chi Squares were calculated wherever applicable.

## RESULTS

### Age and Sex Distribution

The study group consisted of 396 subjects of which 342 (86.36%) were males and 54 (13.64%) were females. All the 5 subjects in the age group of 21-30 years were males. Out of the 63 subjects in the age group of 31-40 years, 54 (85.71%) were males and 9 (14.29%) were females. Out of the 155 subjects in the age group of 41-50 years, 141 (90.97%) were males and 14 (9.03%) were females. Out of the 104 subjects in the age group of 51-60 years, 88 (84.62%) were males and 16 (15.38%) were females. Out of the 9 subjects in the age group of 61-70 years, 54 (78.26%) were males and 15 (21.74%) were females.

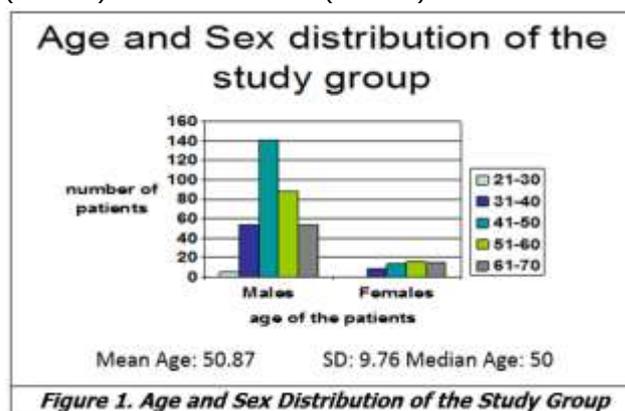
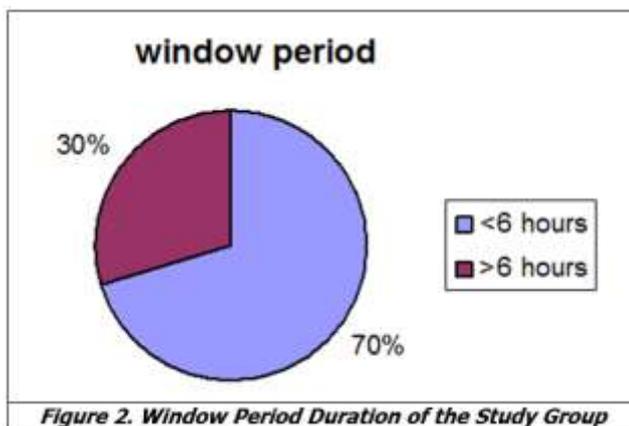


Figure 1. Age and Sex Distribution of the Study Group

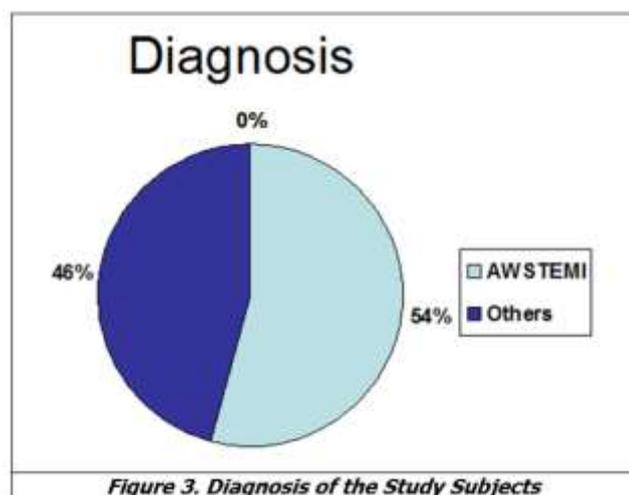
**Window Period**

The mean window period of the study group was 5.4 hours ± 3.42. The median window period is 5 hours. 277 (70%) of the patients presented within 6 hours from symptom onset. Remaining patients presented later than 6 hours.



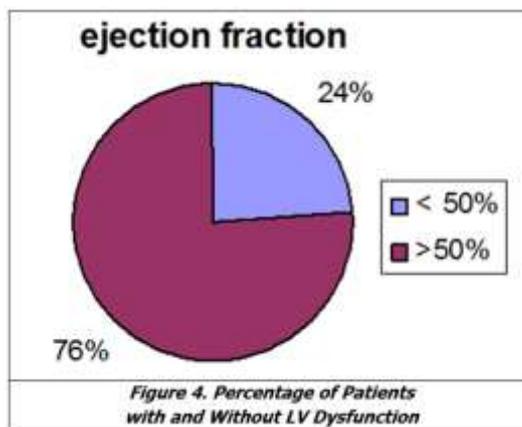
**Diagnosis**

214 (54.04%) of the patients presented with anterior wall MI. The others (inferior, inferoposterior, inferolateral, lateral, RVMI high lateral, and true posterior,) formed the remaining 45.96%.



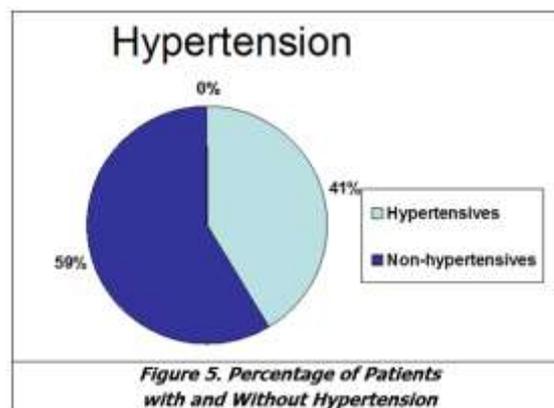
**Ejection Fraction**

95 patients (23.99%) had LV dysfunction with EF < 50% by echocardiography. 301 patients (76.01%) had normal LV function. The mean EF was 55.56 ± 10.16%. The median EF was 56.5%.



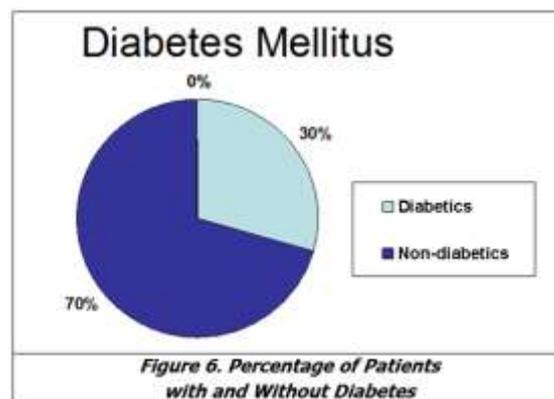
**Hypertension**

164 (41.41%) of the patients had hypertension as a risk factor. 232 (58.59%) patients did not have hypertension as a risk factor.



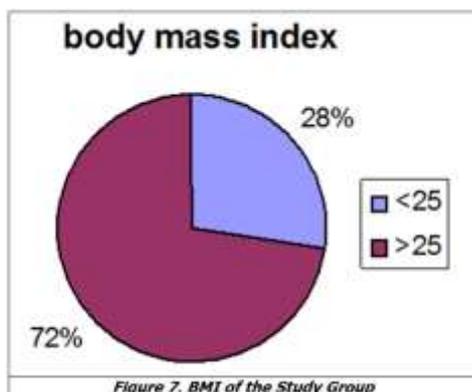
**Diabetes Mellitus**

117 (29.55%) patients had diabetes as a risk factor. 279 (70.45%) patients did not have diabetes.



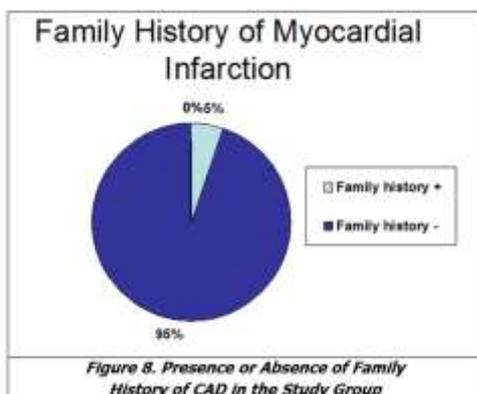
**BMI**

The mean BMI of the study group was 23.56 ± 3.58. 109 patients (28%) had a BMI < 25 and 287 patients (72%) had a BMI > 25.



**Family History**

Family history of CAD was present in 21 (5%) patients. 375 (95%) patients did not have family history of CAD.

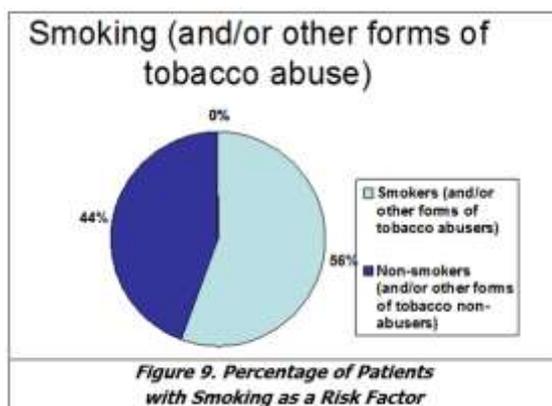


Family history of MI present: 21 /396 = 5.3%  
 Family history of MI absent: 375/396 = 94.7%

**Smoking (and/or Other Forms of Tobacco Abuse)**

Smoking (and/or other forms of tobacco abuse) as a risk factor was present in 220 (55.56%) of the patients. 176 (44.44%) of patients were non-smokers (and/or other forms of tobacco non-abusers).

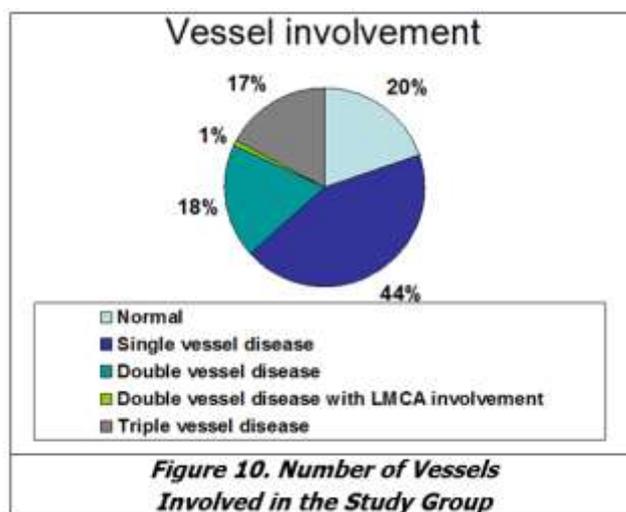
Smokers: 220/396 = 55.56%  
 Non-smokers: 176/396 = 44.44%



**Angiographic Characteristics:**

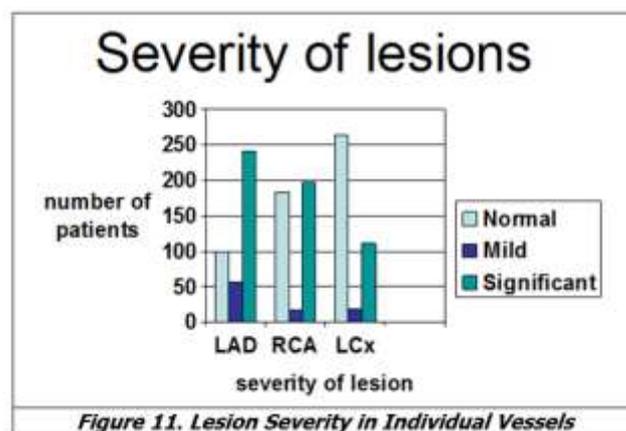
Number of vessels involved  
 Normal: 78 (19.6%)  
 Single vessel disease: 173 (43.6%)  
 Double vessel disease: 73 (18.4%)

Double vessel disease with LMCA involvement: 4 (1%)  
 Triple vessel disease: 68 (17.1%)



**Severity of Lesions in Different Arteries**

Out of the 396 study subjects, LAD was normal in 99 (25%), mildly involved in 56 (14.14%) and severely involved in 241 (60.86%). Out of the 396 study subjects, RCA was normal in 183 (46.21%), mildly involved in 16 (4.04%) and severely involved in 197 (49.75%). Out of the 396 study subjects, LCx was normal in 265 (66.92%), mildly involved in 19 (4.8%) and severely involved in 112 (28.28%).



Artery	Thrombus Present	Thrombus Absent	Total
LAD	23 (10.95%)	187 (89.05%)	210
RCA	10 (6.17%)	152 (93.83%)	162
LCx	0 (0%)	24 (100%)	24
Total	33 (8.33%)	363 (91.67%)	396

**Table 1. Presence or Absence of Thrombus in the Infarct Related Artery**

Out of the 210 study subjects in whom LAD was the infarct related artery, thrombus was present in 23 (10.95%) and absent in 187 (89.05%) subjects. Out of the 162 study subjects in whom RCA was the infarct related artery, thrombus was present in 10 (6.17%) and absent in 152 (93.83%) subjects. In all the 24 study subjects in whom LCx was the infarct related artery, thrombus was absent.

Artery	TIMI Flow 0	TIMI Flow 1	TIMI Flow 2	TIMI Flow 3	Total
LAD	7 (3.33%)	15 (7.14%)	20 (9.52%)	168 (80.01%)	210
RCA	8 (4.94%)	9 (5.56%)	8 (4.94%)	137 (84.56%)	162
LCx	0 (0%)	0 (0%)	3 (12.5%)	21 (87.5%)	24
Total	15 (3.79%)	24 (6.06%)	31 (7.83%)	326 (82.32%)	396

**Table 2. Patency of the Infarct Related Artery as Assessed by TIMI Flow**

Out of the 210 study subjects in whom LAD was the infarct related artery, TIMI Flow 0 was seen in 7 (3.33%) subjects, TIMI Flow 1 was seen in 15 (7.14%), TIMI Flow 2 was seen in 20 (9.52%) and TIMI Flow 3 was seen in 168 (80.01%). Out of the 162 study subjects in whom RCA was the infarct related artery, TIMI Flow 0 was seen in 8 (4.94%) subjects, TIMI Flow 1 was seen in 9 (5.56%), TIMI Flow 2 was seen in 8 (4.94%) and TIMI Flow 3 was seen in 137 (84.56%). Out of the 24 study subjects in whom LCx was the infarct related artery, TIMI Flow 0 and TIMI Flow 1 were not seen in any subject, TIMI Flow 2 was seen in 3 (12.5%) and TIMI Flow 3 was seen in 21 (87.5%).

## DISCUSSION

In the present study, the majority of patients were males (86.36%) when compared to females. The mean age of the patients was  $50.87 \pm 9.76$  years. Most of the patients (69.95%) in the present study reached the ICCU within a window period of 6 hours. The mean window period was 5.4 hours. 54.04% of the patients presented with anterior wall STEMI. 76.01% of the patients had an EF more than 50%. 58.59% of the patients had hypertension as a risk factor. Diabetes mellitus was present in 70.45% of the patients. The average BMI of the patients was  $23.56 \pm 3.58$ . Family history of CAD was present in 5.3% of the patients. 56.56% of the patients were smokers.

In the angiographic characteristics, normal coronaries were seen in 19.6% of the patients. Single vessel disease was predominantly seen 43.6% of the patients. Double vessel disease was seen in 18.4% of the patients and triple vessel disease was seen in 17.1% of the patients. LMCA involvement was seen in 1% of the patients. LAD was artery predominantly involved in 75% of the patients. LCX was least involved (33%) of the patients. Discrete lesions were predominantly seen when compared to long or diffuse disease in each of the individual arteries. Lesions were located predominantly in the mid portion of the artery in all three vessels. Thrombus was present in the infarct related artery in 8.3% of the patients. Among the three vessels LAD had a higher number of patients with thrombus (10.95%). Patency of the infarct related artery as assessed by the TIMI flow showed TIMI 3 flow in 82.32% of the patients.

An analysis between the base line characteristics and the angiographic profile was suggestive of the following features: normal coronaries were present in a higher proportion of patients who were younger than 50 years, higher proportion of males when compared to females, and

in a higher proportion of smokers. Significant coronary arterial involvement is seen in a higher proportion of patients who were older than 50 years, a higher proportion of females when compared to males, in a higher proportion of patients who presented with a window period >6 hours, in a higher proportion of patients who had anterior location of the infarction, in a higher proportion of patients who had an EF <50, in a higher proportion of patients who were diabetics, and in a higher proportion of patients who were hypertensives. Thrombus in the infarct related artery was significantly seen in a higher proportion of patients who older than 50 years, in a higher proportion of patients who presented with a window period >6 hours and in a higher proportion of patients who had an EF <50. Patency of the infarct related artery as assessed by TIMI flow was of TIMI 3 grade was in present in a higher proportion of patients who were younger than 50 years and in a higher proportion of patients who had an EF >50.

The GRACIA – 2 non inferiority, randomized controlled trial, compared primary angioplasty with early routine post fibrinolytic angioplasty for acute STEMI. The fibrinolytic group showed the following characteristics: a mean age of  $62 \pm 12.6$  years, higher percentage of male patients (79.8%), hypertension was a risk factor in 41.3% of patients, diabetes was a risk factor in 23% of the patients, smoking was seen in 50% of the patients, and family history of CAD was present in 16% of the patients. The average window period was  $3.3 \pm 2.2$  hours. The average EF was  $53.5 \pm 11.1\%$ . The angiographic characteristics of the fibrinolytic treated group showed a predominant single vessel disease (55.5%), LAD was the predominant artery involved (45.6%), and normal coronaries in 10.7% of the patients. Angiographically evident thrombus was present in 67% of the patients. TIMI 3 flow in the infarct related artery was present in 67% of the patients.<sup>11</sup>

In the study by Philippe Gabriel Steg et al, published in the European heart journal in 2005, the long-term outcomes following rescue PTCA and successful fibrinolytic treatment for acute STEMI were studied. The baseline characters included a mean age of  $56 \pm 12$  years. 86% of the patients were males. The average window period was  $2.8 \pm 1.25$  hours. Anterior wall infarcts were seen in 51% of the patients. In the angiographic characteristics, LAD was involved in 49% of the patients, RCA in 38%, LCX in 12%, and LMCA in 1% of the patients. 60% of the patients had TIMI 3 flow in the infarct related artery. Patients who were diabetics and those who had hyperlipidaemia had TIMI 1/2 flow in the infarct related artery and the association is significant.<sup>12</sup>

The CLARITY TIMI 28 trial, was a multicentre, international, randomized, double-blind, placebo-controlled trial of aspirin vs. aspirin plus clopidogrel in 3491 patients treated with fibrinolytic therapy for STEMI. Enrolled patients were 18–75 years of age, presented within 12 h of the onset of STEMI, and had undergone coronary angiography 2–8 days after randomization. The study analysed the association between the myocardial perfusion grade and the presence of angiographically evident thrombus, following

fibrinolytic therapy. The study showed a significant association between presence of thrombus in the infarct related artery and non-anterior location of infarction, and presence of hyperlipidaemia. However older patients, male patients and patients who had anterior location of infarction had impaired tissue myocardial perfusion.<sup>13</sup>

In an analysis of pooled data from Thrombolysis In Myocardial Infarction (TIMI)-4, TIMI- 10, TIMI-14, Integrilin and Tenecteplase in Acute Myocardial Infarction (INTEGRITI), Enoxaparin as Adjunctive Antithrombin Therapy for ST-Elevation Myocardial Infarction (ENTIRE-TIMI-23), and Fibrinolytic and Aggrastat ST-Elevation Resolution (FASTER) studies in STEMI, C. Michael Gibson et al have shown a significant involvement of the LAD, presence of single vessel disease in a higher percentage of patients, significantly higher presence of thrombus in patients with a delayed window period. The baseline characters showed a mean age of 59.2±11.3 years, male predominance, and diabetes as a risk factor in 15% of the patients, hypertension in 33% of the patients, and smoking in 48.6% of the patients.<sup>14</sup> Thrombus in the IRA artery was seen in 38.1% and 38.4% in patients who presented within 4 hours and later than 4 hours for thrombolysis.

In the Indian context, a study from Madurai Medical College, has shown the presence of thrombus in the infarct related artery in 20% of the patients, thrombolysed with STK, there was a significant association between presence of thrombus in the IRA and presence of anterior wall MI, and LV dysfunction as assessed by echocardiography.

In comparison with the present study, other studies showed an older age of presentation, early window period, lesser percentage of patients with risk factors like hypertension and diabetes. However, the percentage of smokers was similar in majority of the studies. The younger age of presentation in the present study might be explained the presence of higher number of risk factors when compared to the other studies. Single vessel disease, LAD involvement was seen in a higher percentage of patients in all the studies. Normal coronaries were seen in a higher percentage of patients who were smokers in majority of the studies and could be explained by the presence of smoker’s paradox. The present study showed a greater resolution of the thrombus in the infarct related artery in comparison with the other studies. In other studies angiography was done early in the course of hospital stay than the present study. The action of endogenous thrombolytic mechanisms, and aggressive antiplatelet and anti-coagulant therapy might explain the lesser incidence of thrombus in the present study. Other explanation for the differences in the angiographic profile might be explained on the differences between the thrombolytic agents used in the other studies. The significant association between the presence of thrombus in the IRA and the patency of the IRA with the delay in window period is similar in all the studies.

Sl. No.	Characteristics	Present Study	GRACIA II	Phillipe Gabriel Steg et al	Meta Analyses of Thrombolytic Trials	Madurai Medical College Study
1.	Mean age	50.8±9	60.2±	56 ± 12 years	59.2 ± 11.3	-
2.	Males (%)	86.36%	79.8%	86%	-	-
3.	Smokers	56.56%	50%	-	48.6%	-
4.	Hypertension	58.59%	41.3%	-	33%	-
5.	Diabetes	70.45%	23%	-	15%	-
6.	Family history	5.3%	16%	-	-	-
7.	Window period (hours)	5.4	3.3 ± 2.2	2.8± 1.25	-	-
8.	LVEF (%)	55.5 ± 10.1%	53.5 ± 11.1%	-	-	-
9.	Number of vessels involved predominantly (1, 2, 3)	1 (43.6%)	1 (55.5%)	-	1	-
10.	Thrombus in the IRA (%)	8.3%	67%	-	38.1%	20%
11.	Predominant TIMI flow	3 (82.32%)	3 (67%)	3 (60%)		-

**Table 3. Comparative Characteristics of Selected Studies**

**Summary**

To summarize the findings of the present study, the study involved 396 patients who received STK for acute STEMI. Males (342/396, 86.36%) constituted majority of the population and females constituted 13.64% (54/396) of the study population. Of note all MI patients younger than 30 years were males and in all age groups male predominance is seen.

70% of patients (277/396) presented within 6 hours of onset of symptoms. 54.04% (214/396) of the patients had anterior STEMI. LV dysfunction was seen in 23.99% of the patients. Among risk factors, hypertension was seen in 41.41% (164/396), diabetes mellitus in 28.55% (117/396) of the patients, family history of CAD in 5% (27/396) of the patients, smoking in 55.06% (220/396%) of the patients, and BMI> 25 was seen in 72% (287/396) of the patients.

Coronary angiograms showed no intraluminal obstruction in 19% (78/396) of patients, single vessel disease in 43.6% (173/396) of the patients, double vessel disease in 18.4% (73/396) of the patients, triple vessel disease in 12.1% (68/396) of the patients and LMCA disease was seen in 1% (4/396) of the patients. Out of the 210 study subjects in whom LAD was the infarct related artery, thrombus was present in 23 (10.95%) and absent in 187 (89.05%) subjects. Out of the 162 study subjects in whom RCA was the infarct related artery, thrombus was present in 10 (6.17%) and absent in 152 (93.83%) subjects. In all the 24 study subjects in whom LCx was the infarct related artery, thrombus was absent. Out of the 210 study subjects in whom LAD was the infarct related artery, TIMI Flow 3 was seen in 168 (80.01%). Out of the 162 study subjects in

whom RCA was the infarct related artery, TIMI Flow 3 was seen in 137 (84.56%). Out of the 24 study subjects in whom LCx was the infarct related artery, TIMI Flow 3 was seen in 21 (87.5%).

A significantly higher proportion of study subjects up to 50 years of age have normal coronaries. Among the study subjects in whom coronary arterial involvement is seen, a significantly higher proportion of study subjects up to the age of 50 years have single vessel disease. Absence of thrombus in IRA in study subjects up to 50 years of age is significant. Out of the 326 study subjects with TIMI Flow 3, 196 (60.12%) were up to the age of 50 years and the remaining 130 (39.88%) were more than 50 years. A significantly higher proportion of subjects up to 50 years of age have TIMI flow 3.

Out of the 277 study subjects with Window Period of 6 hours or less, 59 (21.3%) had Ejection Fraction less than 50 percent and the remaining 218 (78.7%) had Ejection Fraction of 50 percent or more. Out of the 119 study subjects with Window Period of more than 6 hours, 36 (30.25%) had Ejection Fraction less than 50 percent and the remaining 83 (69.75%) had Ejection Fraction of 50 percent or more. Out of the 33 study subjects with thrombus in the infarct related artery, 17 (51.52%) had Ejection Fraction less than 50 percent and the remaining 16 (48.48%) had Ejection Fraction of 50 percent or more. A higher proportion of study subjects with thrombus in IRA had EF less than 50 and this association is significant. Out of the 363 study subjects without thrombus in the infarct related artery, 260 (71.63%) had window period of 6 hours or less and the remaining 103 (28.38%) had window period of more than 6 hours. Presence of thrombus in IRA in study subjects with window period > 6 hours is significant.

Out of the 78 study subjects with normal coronaries, 55 (70.51%) subjects were smokers and the remaining 23 (29.49%) were non-smokers. Coronaries were spared in a significantly higher proportion among smokers than non-smokers. Out of the 78 study subjects with normal coronaries, 15 (19.23%) subjects were hypertensives and the remaining 63 (80.77%) were non-hypertensives. Out of the 173 study subjects with single vessel disease, 80 (46.24%) subjects were hypertensives and the remaining 93 (53.76%) were non-hypertensives. Out of the 77 study subjects with double vessel disease, 32 (41.56%) subjects were hypertensives and the remaining 45 (58.44%) were non-hypertensives. Out of the 68 study subjects with triple vessel disease, 37 (54.41%) subjects were hypertensives and the remaining 31 (45.59%) were non-hypertensives. Coronaries are significantly involved in hypertensive study subjects. Out of the 78 study subjects with normal coronaries, 15 (19.23%) subjects were diabetics and the remaining 63 (80.77%) were non-diabetics. Out of the 173 study subjects with single vessel disease, 52 (30.06%) subjects were diabetics and the remaining 121 (69.94%) were non-diabetics. Out of the 77 study subjects with double vessel disease, 30 (38.96%) subjects were diabetics and the remaining 47 (61.04%) were non-diabetics. Out of the 68 study subjects with triple vessel disease, 20 (29.41%)

subjects were diabetics and the remaining 48 (70.59%) were non-diabetics. Coronaries are significantly involved in a higher proportion of diabetic study subjects. Out of the 78 study subjects with normal coronaries, 17 (21.79%) subjects were overweight (or obese) and the remaining 61 (78.21%) were not overweight (or obese). Out of the 173 study subjects with single vessel disease, 61 (35.26%) subjects were overweight (or obese) and the remaining 112 (64.74%) were not overweight (or obese). Out of the 77 study subjects with double vessel disease, 16 (20.78%) subjects were overweight (or obese) and the remaining 61 (79.22%) were not overweight (or obese). Out of the 68 study subjects with triple vessel disease, 15 (22.06%) subjects were overweight (or obese) and the remaining 53 (77.94%) were not overweight (or obese).

## CONCLUSIONS

1. STEMI is more common in males in all age groups.
2. 70% of patients presented within 6 hours after onset of pain.
3. Patent Infarct Related Artery is seen more commonly in males, smokers and young patients. Most of the patients with patent Infarct Related Artery had preserved LV function with EF>50%.
4. Thrombus in the IRA is seen more commonly in old patients > 50 years and in those who presented after 6 hours of onset of pain. Most of them had LV dysfunction.
5. Significant coronary involvement is seen in old age, females, those who presented with late window period, diabetics and hypertensives.

The results of the present study indicate the need for aggressive control of cardiovascular risk factors, early initiation of reperfusion therapy in patients with STEMI. Given the limited amount of primary PCI centers in our country, thrombolytic therapy with Streptokinase is not only a low-cost treatment option but also an effective one. This study also highlights the important differences in the age of presentation and the risk factor profile between western countries and India. This prompts us to undertake further research and appropriate measures to control the silent but rapidly progressing epidemic of cardiovascular disease.

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