Results

Basic characteristics of the whole study population

The study population consisted of thirty patients with acute STEMI, eligible for reperfusion, their age ranged from 33 to 72 years. The mean age in years was 55.27± 10.74. It included twenty five males (83.3%) and five females (16.7%). nineteen patients (63.3%) were smokers, thirteen patients (43.3%) were hypertensive, twelve patients (40%) were diabetics and only two patients (6.7%) had positive family history for CAD. These data are shown in **table (5).**

Table (5) : Basic characteristics and risk factors for the whole study population.

Variable	Number = 30
Age in years Mean± SD	 55.27± 10.74
Sex Male number (%) Female number (%)	 25 (83.3%) 5 (16.7%)
Hypertension Number (%)	 13 (43.3%)
Diabetes mellitus Number (%)	 12 (40%)
Smokers Number (%)	 19 (63.3%)
Positive family History Number (%)	 2 (6.7%)
Categorial variables were expressed as an absolute and relative frequencies (percentage) while continuous variables were presented as mean values ± SD.	

Anterior wall myocardial infarction was the presenting picture in 19 patients (63.4%), whereas 11 patients (36.6%) presented with non anterior wall myocardial infarction.

Time of reperfusion by 1ry PCI ranged between 0.5 to 12 hours with a mean time of 5.9±3.8 hours, Primary PCI was done to 15 patients (50%) within 6 hours of the onset of chest pain whereas 15 patients (50%) after 6 hours of the onset of pain.

Coronary angiography revealed that 23 patients (76.7%) had single vessel disease and 7 patients (23.3%)had multiple vessel disease. The post procedure TIMI flow ranged from TIMI 2 flow in 7 patients (23.3%), and TIMI 3 flow in 23 patients (76.7%).

Size of myocardial infarction and risk factors.

There were no significant differences in size of myocardial infarction regarding sex, HTN,DM, smoking and family history as shown in **table(6) figure (6) and (7)**

Table (6): Effect of risk factors on infarction size.

Variable	Groups	Size of infarction Mean± SD	P value
Sex	Male	10.29±8.53	>0.05
	Female	11.0±13.5	
HTN	YES	10.07±11.45	>0.05
	NO	10.88±8.99	
DM	YES	8.65±8.74	>0.05
	NO	12.92±11.41	
Smoking	YES	10.67±11.02	>0.05
	NO	10.25±8.81	
FH	YES	15.0±15.87	>0.05
	NO	10.0±9.5	

(P>0.05=non significant, P<0.05=significant)

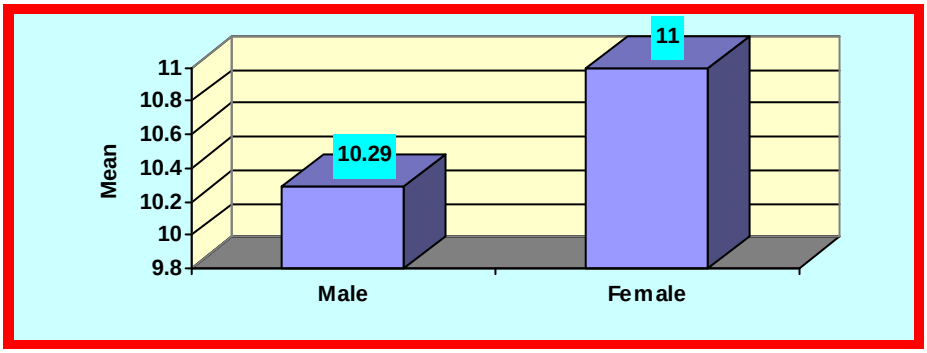

Figure (6): Effect of sex on infarct size.

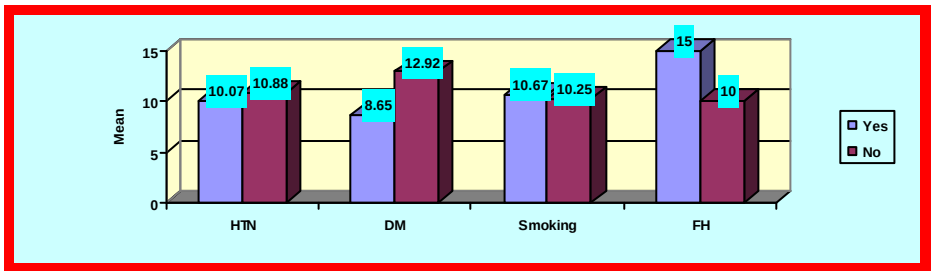

Figure (7): Effect of other risk factors on infarction size.

The Initial size of myocardial infarction in all patients was estimated before primary PCI by ECG score(selvester QRS) and by resting Tc-99m sestamibi imaging then the final infarction size was estimated after reperfusion by ECG score and another image of TC99 then myocardial salvage was calculated.

The initial and final size of myocardial infarction and myocardial salvage in all patients were estimated by selvester QRS score were (21.9±9.12 , 13.0±6.78 , 9.08±6.34) respectively while by using resting Tc-99m sestamibi imaging were (29.47±13.76, 19.37±11.73 , 10.37±6.98) respectively. for all patients There was a significant correlation between selvester QRS score and resting Tc-99m sestamibi imaging **r**=0.774 (**P**=0.001) for initial size of myocardial infarction and **r**=0.659 (**p**=0.001)

for final size of myocardial infarction and r=0.886 (**p**=0.001) for myocardial salvage respectively **(table 7) (figure8).**

Table (7):correlation between selvester QRS score and resting Tc-99m sestamibi for the initial size, the final size of myocardial infarction and myocardial salvage.

Estimation Infarction size by		Pearson correlation	P value
Selvester QRS score	By restint TC99 sestamibi		
Initial size	Initial size	0.774	0.001
Final size	Final size	0.659	0.001
Myocardial salvage	Myocardial salvage	0.886	0.001

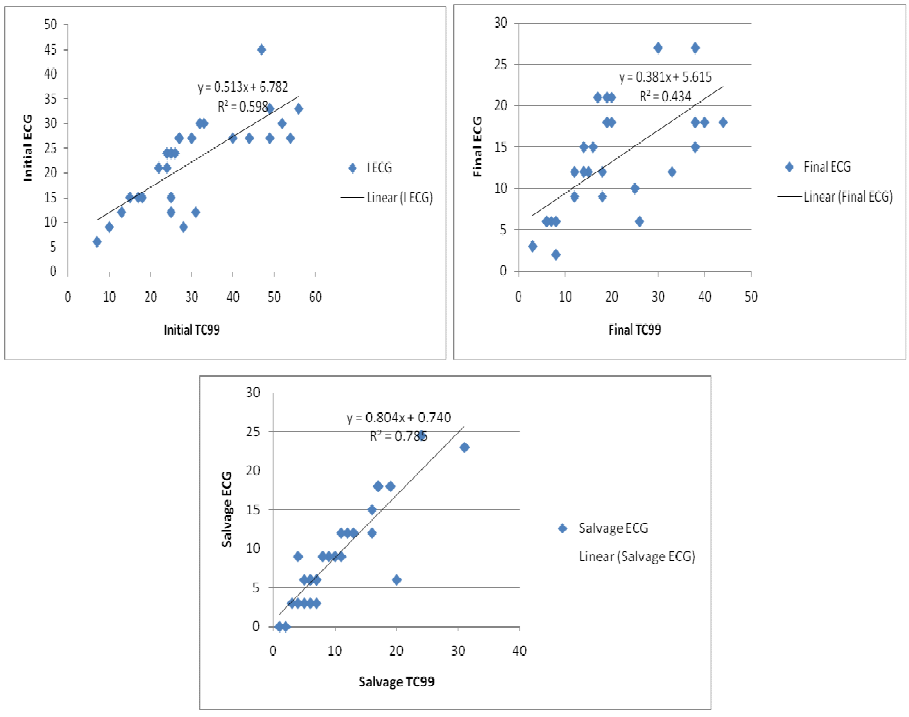

Figure (8): correlation between selvester ORS score and resting TC99 in whole group of patients.

Among patients with anterior wall MI, a good significant correlation was found between selvester QRS score and resting Tc-99m sestamibi imagine r=0.674(**P**=0.002) for initial size of myocardial infarction and r=0.546 (**p**=0.016) for final size of myocardial infarction and r=0.936 (**p=**0.001) for myocardial salvage respectvely **(table 8) (figure 9)**

Table (8): correlation between selvester QRS Score and resting TC99 sestamibi in patients with anterior MI.

Anterior MI		Pearson correlation	P value	Significance
Initial ECG	Initial TC99	0.674	0.002	S
Final ECG	Final TC99	0.546	0.016	S
Myocardial salvage ECG	Myocardial salvageTC99	0.936	0.001	S

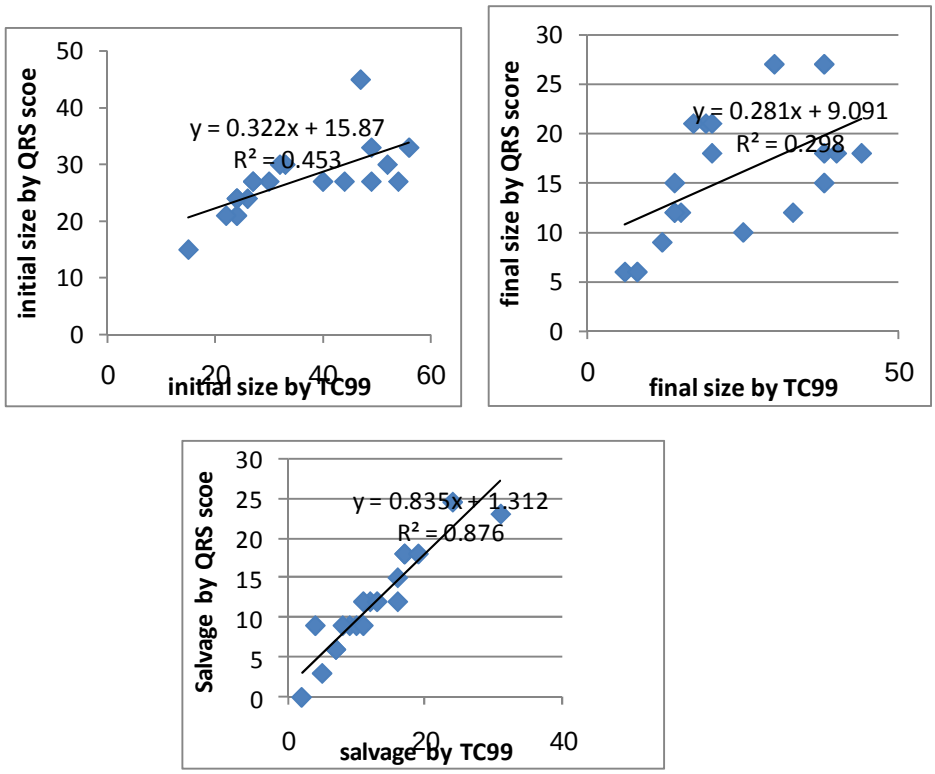

Figure (9): correlation between selvester ORS score and resting TC99 sestamibi in patients with anterior MI.

Post procedural TIMI flow is an important factor that affect the correlation between QRS score and resting TC99 sestamibi. The correlation was higher in patients with post procedural TIMI 3 flow. the correlation was r=0.817 (**P**=0.001) for initial size, r=0.678 (**p=**0.001) for final size and r=0.939 (**P**=0.001) for myocardial salvage **table (9) figure (10)**

Table (9): Correlation between QRS score and resting TC99 in patients with post procedural TIMI 3 flow.

TIMI flow 3		Pearson correlation	P value	Significance
Initial ECG	Initial TC99	0.817	0.001	HS
Final ECG	Final TC99	0.678	0.001	HS
Myocardial salvage ECG	Myocardial salvageTC99	0.939	0.001	HS

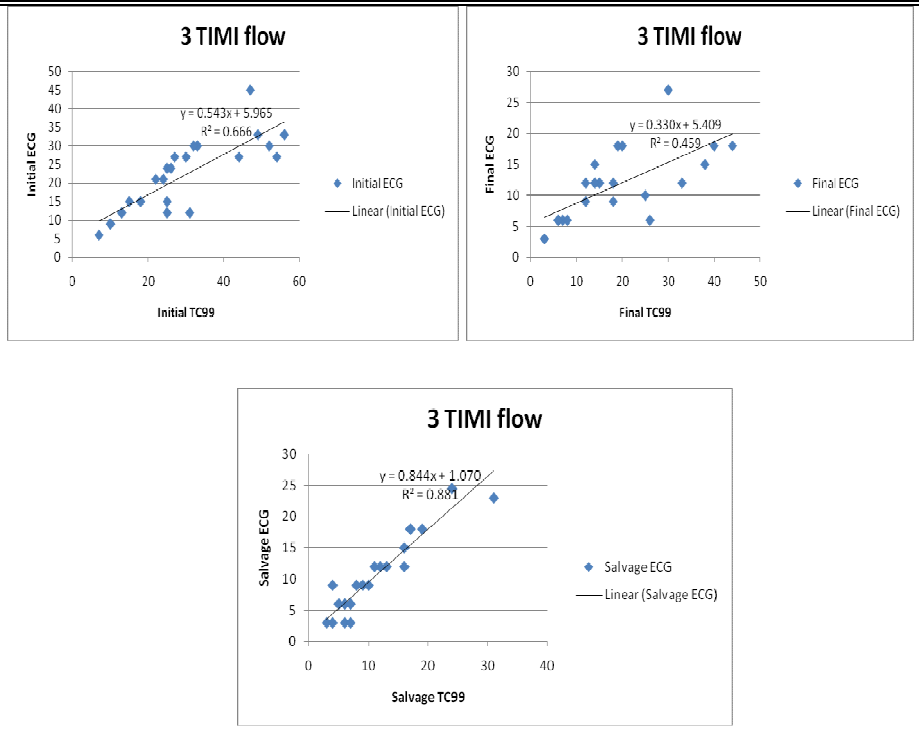

Figure (10): correlation between selvester ORS score and resting TC99 sestamibi in patients with post procedure TIMI 3flow.

Patients with single coronary artery disease had a high significant correlation between QRS score and resting TC99 sestamibi, as follow r=0.955 (**P**=0.001) for initial size of MI, r=0.927 (**p**=0.001) for final size

of MI and r=0.989 (**P**=0.001) for myocardial salvage respectively, **table(10) figure(11)**.

Table (10): Correlation between QRS score and resting TC99 in patients with single vessel disease.

Single vessel		Pearson correlation	P value	Significance
Initial ECG	Initial TC99	0.955	0.001	HS
Final ECG	Final TC99	0.927	0.001	HS
Myocardial salvage ECG	Myocardial salvageTC99	0.989	0.001	HS

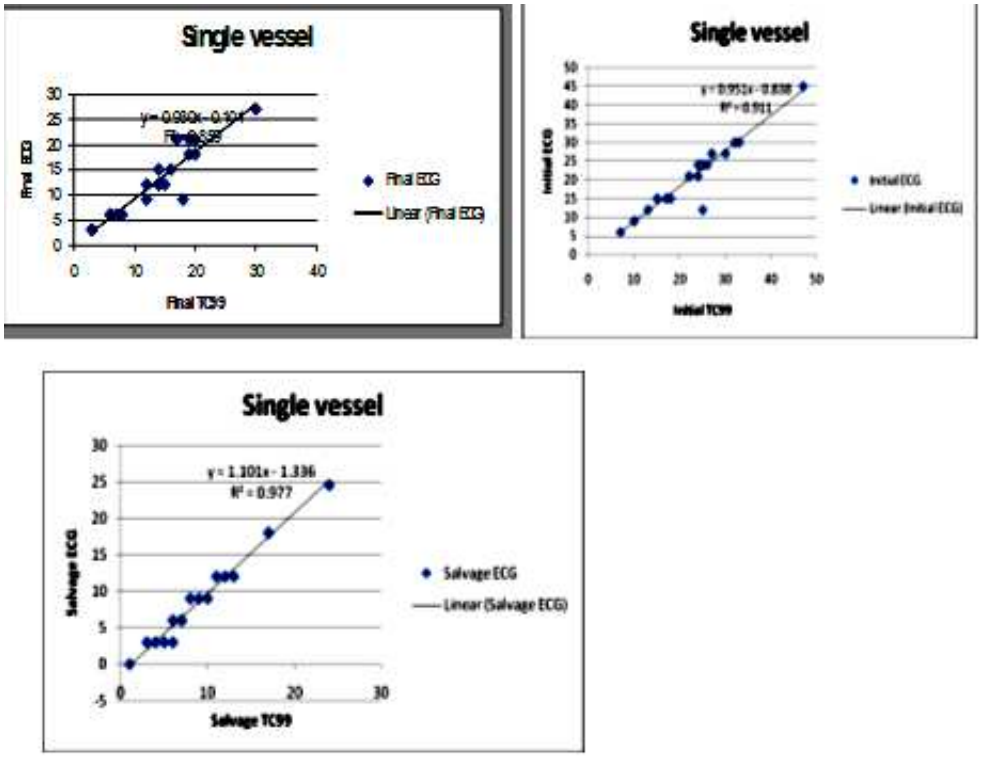

Figure (11): correlation between selvester QRS score and resting TC99 sestamibi in patients with single vessel disease.

while in patients with non anterior wall MI, there was no significant correlation between selvester QRS score and resting Tc-99m sestamibi imagine r=0.454**(P**=0.16) for initial size of myocardial infarction and r=0.588 (**p**=0.057) for final size of myocardial infarction and r=0.519 (**p=**0.102) for myocardial salvage respectively**(table 11)(figure 12).**

Table (11): correlation between selvester QRS Score and TC99 sestamibi in patients with non anterior MI.

Nnon anterior MI		Pearson correlation	P value	Significance
Initial ECG	Initial TC99	0.454	0.16	NS
Final ECG	Final TC99	0.588	0.057	NS
Myocardial salvage ECG	Myocardial salvageTC99	0.519	0.519	NS

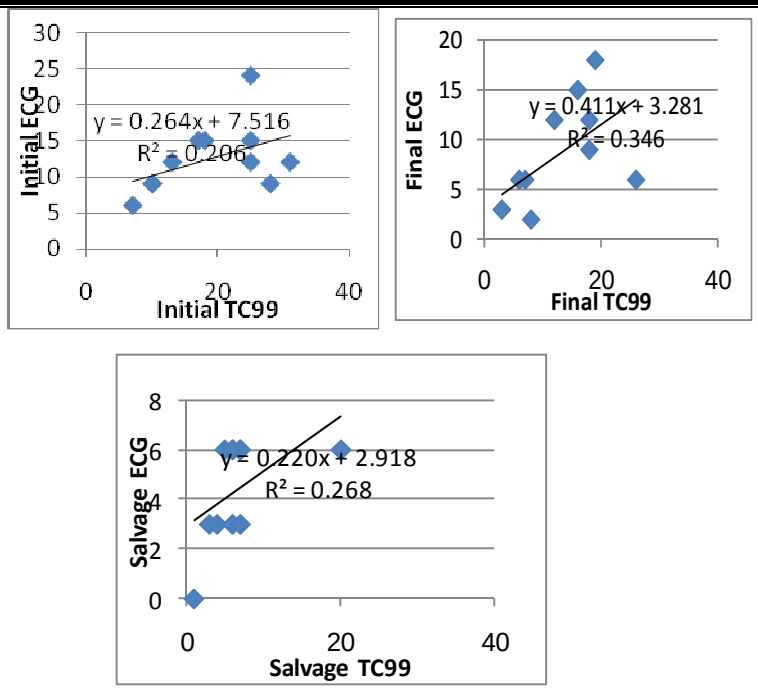

Figure (12): correlation between selvester ORS score and resting TC99 sestamibi in patients with non anterior MI.

Patients with post procedure TIMI 2 flow had no significant correlation between ECG score and resting TC99 r=0.481 (**P**=0.275) for initial size of MI, r=0.66 (**p**=0.107) for final size of MI and r=0.693 (**P**=0.008) for myocardial salvage respectively **(table 12) figure (13).**

Table (12): correlation between selvester QRS Score and resting TC99 sestamibi in patients with post procedure TIMI 2flow.

TIMI flow 2		Pearson correlation	P value	Significance
Initial ECG	Initial TC99	0.481	0.275	NS
Final ECG	Final TC99	0.66	0.107	NS
Myocardial salvage ECG	Myocardial salvageTC99	0.693	0.084	NS

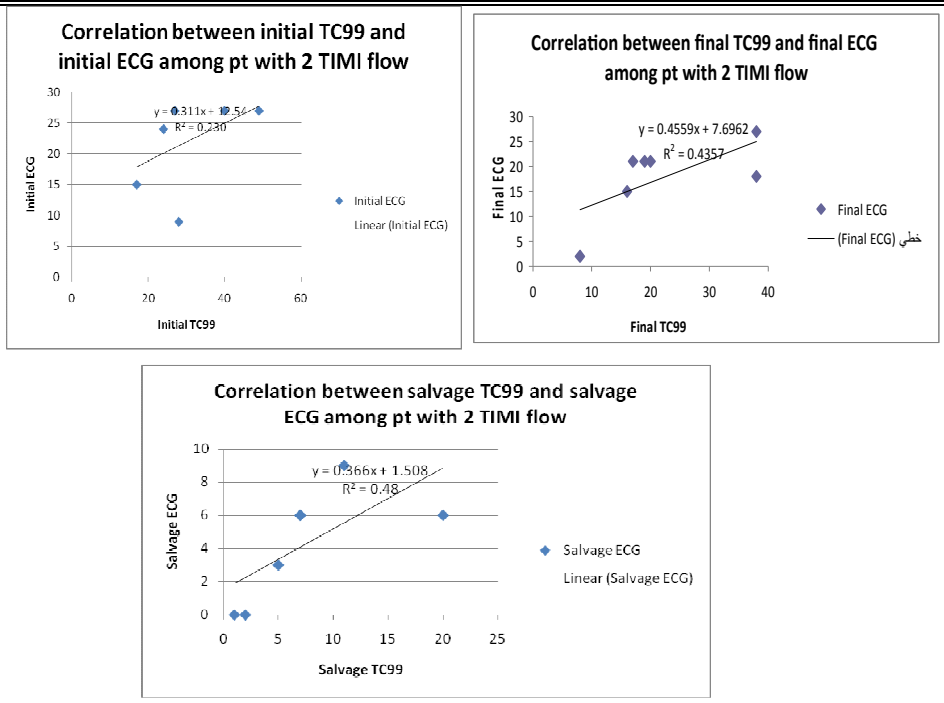

Figure (13): correlation between selvester ORS score and resting TC99 in patients with post procedure TIMI 2 flow.

The correlation between QRS score and resting TC99 in patients with multiple vessel disease was r=0.48(**P**=0.275) for initial size of MI ,r=0.65(**p**=0.107)for final size of MI and r=0.693(**P**= 0.083)for myocardial salvage respectively **table(13) figure(14)**.

Table (13): Correlation between QRS score and TC99 in patients with multiple vessel disease.

Multiple vessels		Pearson correlation	P value	Significance
Initial ECG	Initial TC99	0.481	0.275	NS
Final ECG	Final TC99	0.65	0.107	NS
Myocardial salvage ECG	Myocardial salvageTC99	0.693	0.083	NS

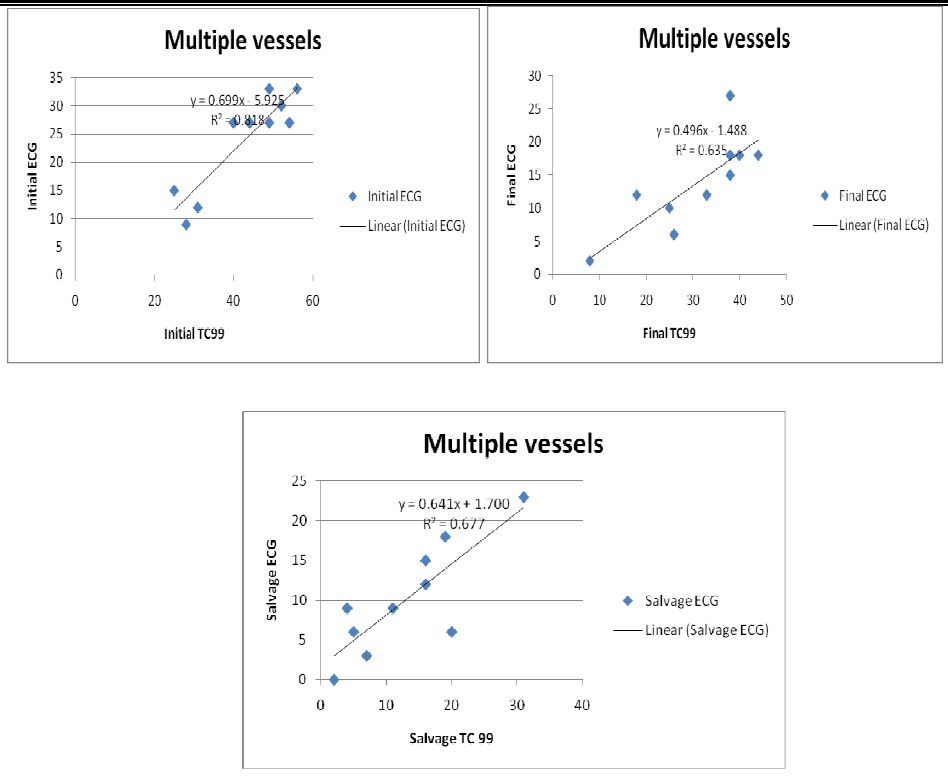

Figure (14): correlation between selvester QRS score and resting TC99 and in patients with multiple vessel disease.

The time of reperfusion didn't affect the correlation between QRS score and resting TC99. In patients treated within < 6 hours of onset of chest pain, the correlation was found between QRS score and resting TC99, r=0.696(**p=**0.004**)** for initial size, r=0.709(**p=**0.003**)** for final size of infarction and r= 0.974(**p**=0.001**)** for myocardial salvage respectively as shown in **table (14**) **figure (15)**. While in patients treated within >6 hours of the onset of chest pain, the correlation was found r=0.816 (0.001**)** for initial size, r=0.601 (**p=**0.018**)** for final size of infarction and r= 0.845 (**p**=0.001**)** for myocardial salvage respectively as shown in **table (14) figure(16)**.

Table (14): Correlation between QRS score and TC99 in patients treated by 1ry PCI within <6hours of onset of chest pain.

Time <6 hours		Pearson correlation	P value	Significance
Initial ECG	Initial TC99	0.696	0.004	HS
Final ECG	Final TC99	0.709	0.003	HS
Myocardial salvage ECG	Myocardial salvageTC99	0.974	0.001	HS

Table (15): Correlation between QRS score and TC99 in patients treated by 1ry PCI within >6hours of the onset chest pain.

Time >6 hours		Pearson correlation	P value	Significance
Initial ECG	Initial TC99	0.817	0.001	HS
Final ECG	Final TC99	0.601	0.018	S
Myocardial salvage ECG	Myocardial salvageTC99	0.845	0.001	HS

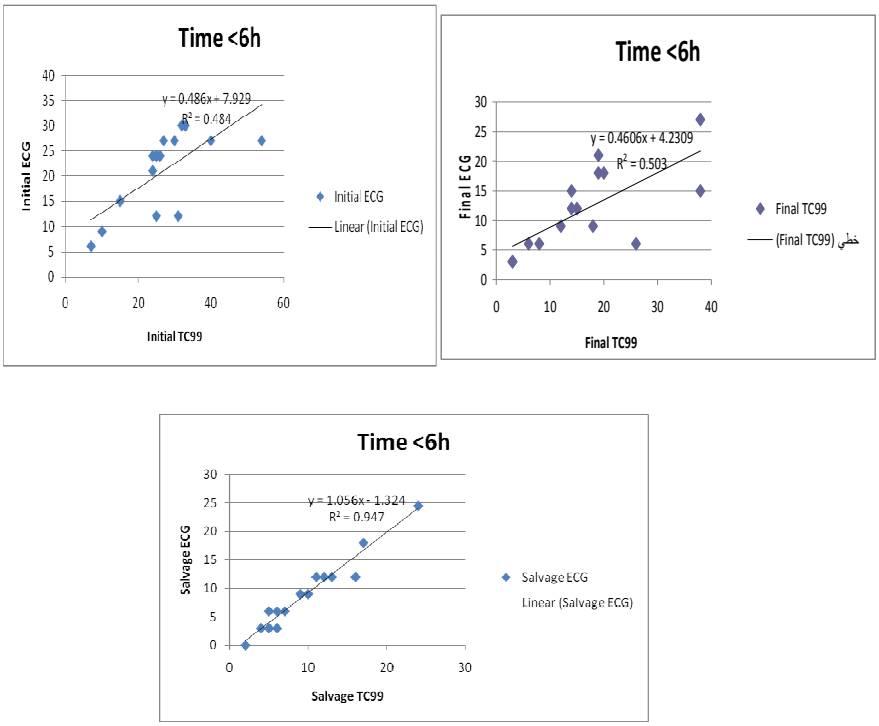

Figure (15): correlation between selvester ORS score and resting TC99 in patients treated by primary PCI within 6h the onset of chest pain.

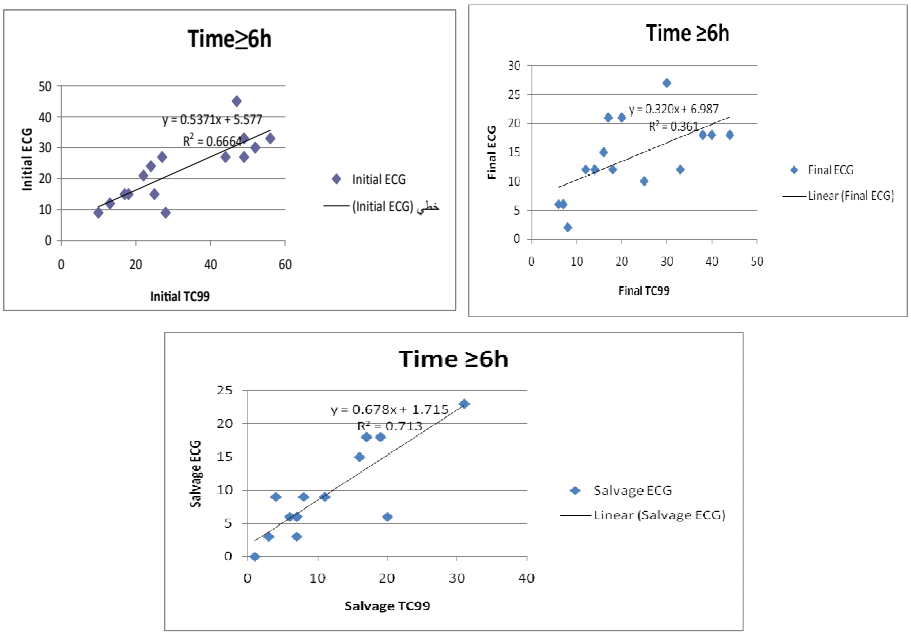

Figure (16): correlation between selvester ORS score and resting TC99 in patients treated by primary PCI> 6h of the onset of chest pain.

Case presentation

Patient number19:

-Male patient53 years old.

-Diabetic and hypertensive on medical treatment.

-presenting within .5hours of the onset of chest pain.

-ECG showed anterior wall MI.

-Coronary angiography had showed single vessel disease (LAD).

-The initial size of MI by QRS score was 39% of LV.

-The final size of MI by QRS score was 9% of LV.

-Myocardial salvage by QRS Score was 30%.

-The initial size of MI by TC99 was 40% of LV.

-The final size of MI by TC99 was 11% of LV.

-Myocardial salvage by TC99 was 29%.

,18) As shown in figure (17

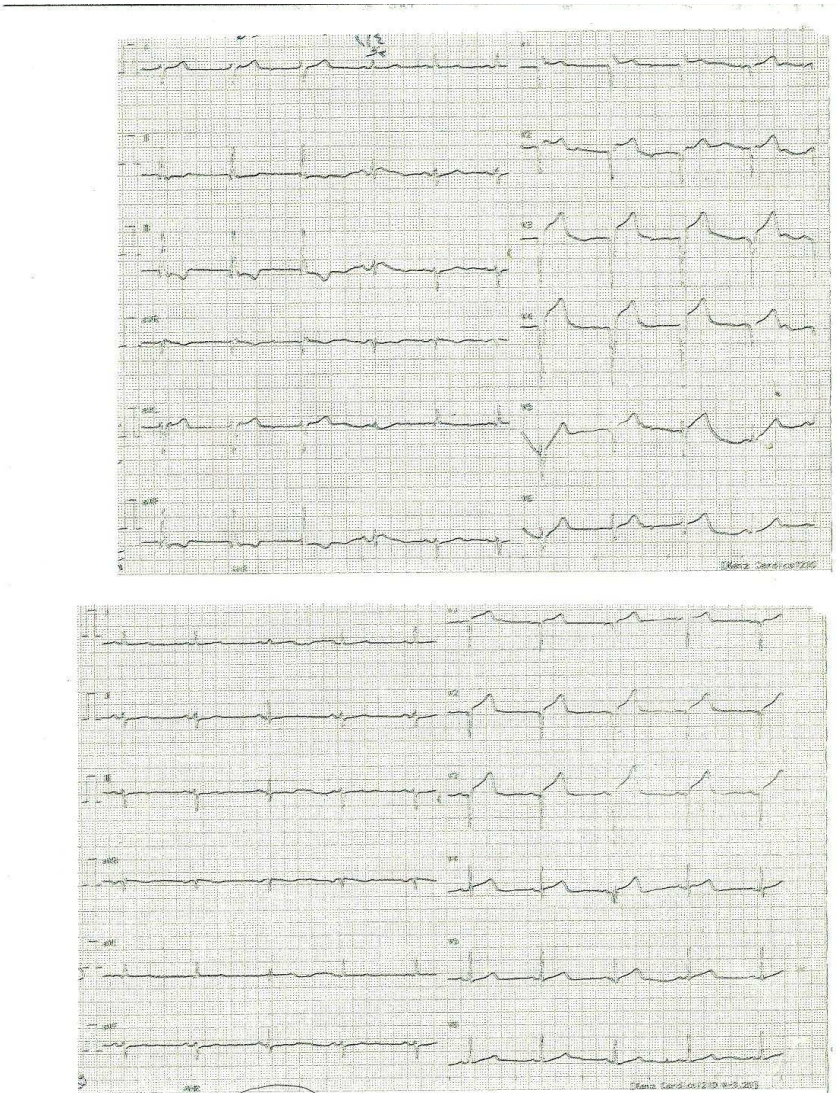

Figure (17): ECG in patient number (19) before and after reperfusion

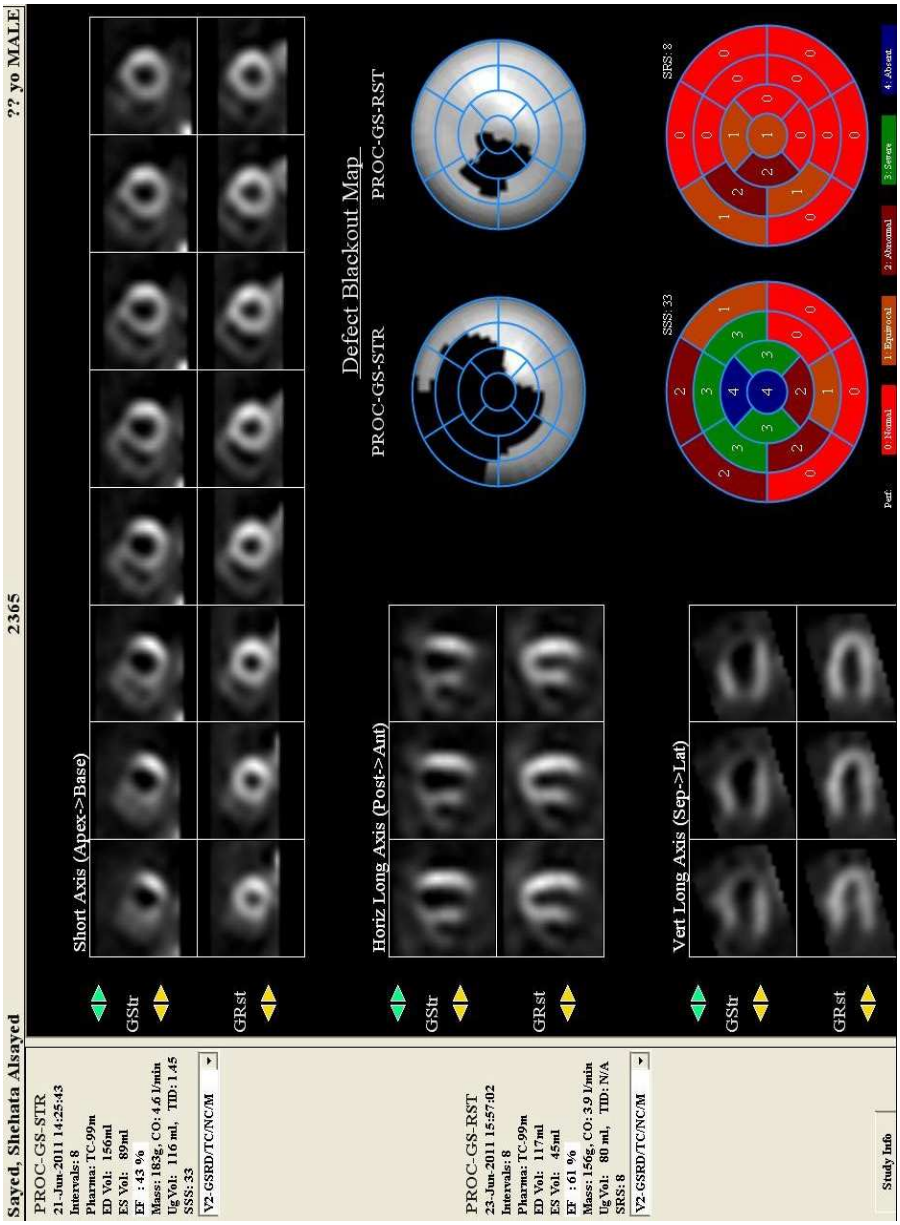

Figure (18): SPECT image in patient number (19) shows the perfusion defect before and after reperfusion.

Patient number (17):

-40 years old male patient.

-Not diabetic, hypertensive on medical treatment.

-presenting within 8 hours of the onset of chest pain.

-ECG showed inferior wall MI.

-Coronary angiography revealed single vessel disease.

-The initial size of MI by QRS score was 15% of LV.

-The final size of MI by QRS score was 6% of LV.

-Myocardial salvage by QRS score was 9%.

-The initial size of MI by TC99 was 17% of LV.

-The final size of MI by TC99 was 8% of LV.

-Myocardial salvage was 9%.

As shown in figure (19,20)

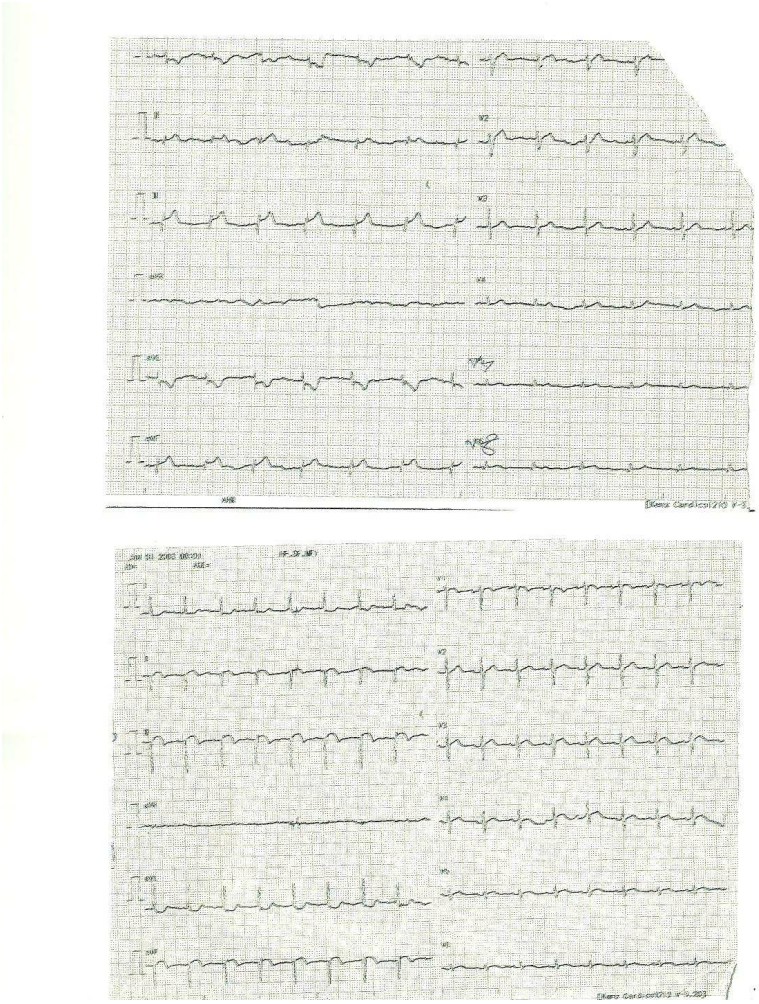

Figure (19): ECG inpatient number (17) before and after reperfusion

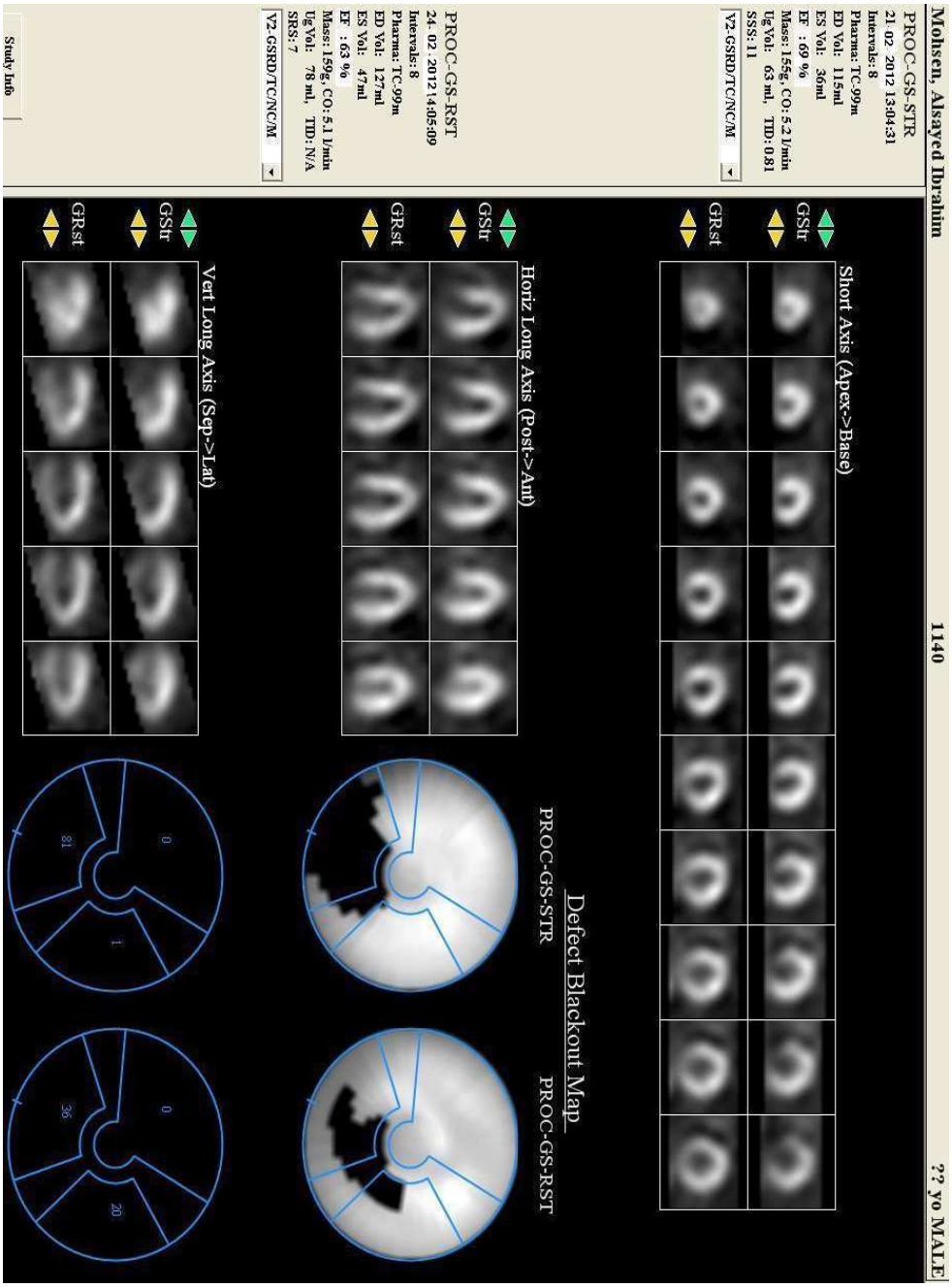

Figure (20): SPECT image in patient number (17) shows perfusion defect before and after reperfusion.