The Egyptian Journal of Hospital Medicine (October 2022) Vol. 89, Page 4386- 4392

Outcome of Primary versus Facilitated Percutaneous Coronary Intervention on Different Times in Patients Presenting with ST Segment Elevation Myocardial Infarction

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ABSTRACT

Background: Primary percutaneous coronary intervention **(**PCI) is the preferred reperfusion strategy in patients with ST segment elevation myocardial infarction (STEMI) within 12 h of symptom onset, provided it can be performed expeditiously (i.e. 120 min from STEMI diagnosis, by an experienced team. An experienced team includes not only interventional cardiologists but also skilled support staff.

Objective: This study aimed to assess the early and 6-month outcomes of ST-elevation myocardial infarction patients according to the use of primary PCI and three different protocols of pharmaco-invasive reperfusion in the acute stage based on timing of PCI after thrombolytic therapy.

Patients and Methods: This prospective cohort study was conducted in Cardiology Department, Zagazig University Hospitals and National Heart Institute. We included 104 consecutive patients with anterior STEMI, within a time period of six months from January 2021 to June 2021.

Results: We found that group A patients had the lowest incidence of major adverse cardiac events (MACE) (death, Maximal Killip class ≥II, severe and life-threatening bleeding) and highest median EF, Group B patients had almost similar MACE rates and 2nd high median LVEF, followed by group C with slightly impaired results, while Group D patients had the highest MACE rates and lowest median LVEF.

Conclusions: Our study showed that pharmaco-invasive strategy with early PCI after fibrinolysis within 24 hours constitutes a valid reperfusion strategy for patients presenting with ST elevation Myocardial infarction, where primary PCI was not feasible, and that the best acute stage and 6 month outcome is achieved with performance of early coronary angiography and intervention within 3-17 hours after fibrinolysis.

Keywords: ST segment elevation myocardial infarction, Primary PCI, Left ventricular ejection fraction.

INTRODUCTION

The most severe form of acute coronary syndrome (ACS) after sudden cardiac death is ST-segment elevation myocardial infarction (STEMI). According to the NRMI-4 (Fourth National Registry of Myocardial Infarction), 29% of infarction patients experience a STEMI [(1)]**.** Whereas a survey in Europe, the EHS-ACS-II (Second Euro Heart Survey on Acute Coronary Syndromes), reported that 47% of ACS patients present with STEMI [(2)]**.** The incidence and fatality rates of an acute STEMI are going down in Western countries as a result of better prevention and treatment. It is likely that STEMI will also become a major cause of death in developing countries due to the reduced mortality from infectious diseases and the adoption of a Western life style. STEMI is generally precipitated by rupture or erosion of an atherosclerotic plaque triggering the formation of an occlusive coronary thrombus. To rescue jeopardized myocardium, rapid restoration of coronary blood flow is critical. Thus, prompt induction of complete and sustained infarct related artery recanalization is paramount. Reperfusion therapy is one of the most successful therapies of modern medicine [(3)]**.**

Primary percutaneous coronary intervention (PCI) is the recommended default reperfusion strategy for patients seen in the first hours following the onset of STEMI. From a practical standpoint, however, primary PCI requires permanent availability of cardiologists, nurses and technicians 24 hours a day and 7 days a week, which may still be a goal difficult to achieve in many areas or countries, and fibrinolytic therapy is still widely used. In the past 10 years, evidence has been brought that fibrinolytic treatment should not be used as stand-alone therapy, but rather as part of a pharmaco-invasive strategy, with the patients brought to PCI-capable facilities after fibrinolysis, to perform semi-urgent coronary angiography and secondary PCI, when necessary [(4)]**.**

Fibrinolytic therapy given before an already planned PCI to mitigate the delay associated with primary PCI does not improve outcome. Several more recent studies, however, suggest that coronary angiography and PCI performed between 3 and 24 hours after administration of the lytic, in case of successful reperfusion, reduces the risk of new ischemic events. As now mentioned in the guidelines, if fibrinolysis is indicated, it needs to be followed by an early coronary angiography. Because of the absence of cross-linking of fibrin in the fresh occlusive clot, such a strategy is especially effective in patients presenting early after symptom onset [(5)]**.**

In the present study, we aimed to assess the early and 6-month outcomes of STEMI patients according to the use of primary PCI and three different protocols of pharmaco-invasive reperfusion in the acute stage based on timing of PCI after thrombolytic therapy.

PATIENTS AND METHODS

This prospective cohort study was conducted in Cardiology Department, Zagazig University Hospitals and National Heart Institute. We included 104

Received: 04/05/2022
Accepted: 05/07/2022

consecutive patients with anterior STEMI, within a time period of six months from January 2021 to June 2021. Patients were randomly divided into four groups on the basis of intention to treat analysis allowing cross over:

Primary PCI arm (PPCI, group A): patients treated with primary PCI within 12 hours from the onset of chest pain without receiving thrombolytic therapy. **Pharmaco-invasive (PI 3-10 H, group B):** patients treated with thrombolytic therapy with streptokinase 1.5 million IU over a period of 30-60 minutes [(6)] coupled with antiplatelet and anticoagulant, patients in this group were sent for a planned intervention within 3 to 10 hours from thrombolysis. **Pharmaco-invasive (PI 10-17, group C):** patients treated with thrombolytic therapy with streptokinase 1.5 million IU coupled with antiplatelet and anticoagulant therapy followed by coronary angiography within 10 to 17 hours from thrombolysis as a planned intervention. **Pharmaco-invasive (PI 17-24, Group D):** patients treated with thrombolytic therapy as described previously in other groups and then planned intervention at 17-24 hours from thrombolysis.

Inclusion criteria: Anterior STEMI up to a maximum of 12 hours from the onset of chest pain, treated with primary PCI or received thrombolytic therapy followed by PCI within 3 to 24 hours after thrombolytic therapy.

Exclusion criteria: Patients who had previous MI within 6 months of presentation. Cardiogenic shock (systolic blood pressure < 80 mmHg, unresponsive to fluids, or necessitating catecholamines). Electrical instability (second and third degree heart block, recurrent VT, VF). Age > 70 years. Inability to comply with study procedures; and unwillingness or inability to provide written informed consent for participation. Patients on regular dialysis. Severe congestive heart failure and/or pulmonary edema. Previous CABG or PCI.

All patients in the study were subjected to demographic, clinical, laboratory, electrocardiographic [(ECG) standard 12-lead surface ECG using GE MAC 1200 Resting ECG Machine], performed before and after thrombolytic therapy or PCI and daily for all the study population. ST resolution was calculated from admission and post-procedure and was considered when ST elevation decrease by more than 70 %, 90 minutes after reperfusion [(7)]. Arrhythmias were recorded. Reperfusion with fibrinolysis by using streptokinase (SK) When primary PCI is not available within 90 min of admission due to any cause. Streptokinase (1.5 million units were given by intravenous infusion over 30-60 minutes) within 30 minutes of admission after exclusion of contraindications and within 12 hours of the onset of maximal chest pain according to ESC guidelines of STEMI [(8)].

Invasive intervention was done for all patients either as a primary PCI within 90 minutes of admission or as an early invasive PCI after thrombolysis (used to be called Facilitated PCI) within 24 Hours of admission if primary PCI could not be done from the start for any cause. The coronary intervention and revascularization was performed by a professional team using (Cine angiographic equipment: GE Innova 2100- IQ: cine frame: 30 fps), and using the dye-filled guiding catheter as a reference. Left and right guiding catheter was introduced through the sheath in femoral artery (trans-femoral approach) or in radial artery (trans-radial approach).

Coronary angiography was done at 1st by injecting dye in the left guiding catheter to visualize left main coronary artery and its branches, then injecting the dye in the right guiding catheter to visualize right coronary artery. The severity of the lesion was visually evaluated by eyeballing of two experienced interventional cardiologists in two parallel planes, where the coronary artery narrowing was visually estimated and expressed as percentage of luminal diameter stenosis. Lesions with ≥ 70% narrowing in any artery or ≥ 50% in left main or proximal LAD were considered as a significant angiographic coronary artery disease [(9)].

Then the procedure of PCI starts by wiring of the culprit artery and restoration of blood flow using standard techniques. Stenting of the lesion either with or without balloon dilatation was done. Aspiration catheter, proximal optimization technique, intra or post-procedure drug use; all were left to the team opinion and according to situation and recent guidelines [(8)]. After the end of the procedure all of the artery containing the fresh thrombus and matches the distribution of STEMI in the ECG, thrombolysis in myocardial infarction (TIMI) flow grade was measured from 0 – 3 after PCI and Myocardial Blush Grade (MBG) was measured from 0 – 3 after PCI [(10)].

Two standard resting echocardiographic examinations were done. The 1st was done immediately after reperfusion, and the 2nd was performed after 6 months from total revascularization with PCI. The 2 echocardiographic examinations were done by the same machine: GE Vivid 9 system Ultrasound (Horten, Norway), and by two separate operators unaware of each other results.

Laboratory investigations: Complete blood count, random blood sugar, urea, creatinine, liver enzymes and electrolytes were withdrawn on admission. Kidney function test (urea, creatinine) was daily withdrawn during admission for detection of contrast induced nephropathy (CIN).

Follow up:

All patients were followed up at 6 month after discharge regarding the primary and the secondary outcome parameters.

Primary outcome parameters: Re-infarction should be considered when ST-elevation ≥ 1 mm recurs or new pathognomonic Q waves appear in at least two

contiguous leads, particularly when associated with ischaemic symptoms [11].

Secondary outcome parameters: Development of Heart failure. The New York Heart Association (NYHA) classification of heart failure has been used to assess patients. It is based on symptom severity and the amount of exertion needed to provoke symptoms, development of significant arrhythmias and surgical revascularization for a lesion anywhere within the stent or the 5-mm borders proximal or distal to the stent [12].

Ethical consent:

An approval of the study was obtained from Zagazig University Academic and Ethical Committee. Every patient signed an informed written consent for acceptance of participation in the study. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Statistic analysis

The collected data were revised, coded, tabulated and introduced to a PC using Statistical Package for Social Science (SPSS) version 23.0 for windows (SPSS Inc., Chicago, IL, USA). The threshold of significance is fixed at 5% level (P value) Significance is detected according to $P > 0.05$: Non-significant (NS), $P \leq 0.05$: Significant (S) and $P<0.01$: Highly significant (HS).

RESULTS

Table (**1**) showed that there was no statistical difference in baseline characteristics between groups, regarding gender (males were found more than women in all groups, p-value: 0.449). The mean age of enrolled patients was 54.24 ± 9.51 years **(**p-value: 0.937). The mean weight of enrolled patients was 80.25 ± 4.25 kg (p-value: 0.663). Also, the mean height 170.7 ± 8.4 cm (p = 0.252).

Table (1): Demographic characteristics

Characteristics	Group								p-value
	PPCI (n=26)		Pharmacoinvasive (n=26/gp)						
			(3-10 h)		(10-17 h)		(17-24 h)		
	n	(%)	N	(%)	n	(%)	n	(%)	
Gender									
Male	20	(76.0)	21	(80.8)	24	(92.3)	22	(84.6)	0.449 [a]
Female	6	(24.0)	5	(19.2)	2	(7.7)	4	(15.4)	
Age (years), mean (SD)	55.0	(8.2)	53.5	(9.6)	54.2	(8.4)	54.3	(8.1)	0.937 [b]
Weight (Kg), mean (SD)	82.6	(11.0)	81.3	(14.9)	80.1	(9.6)	83.9	(9.5)	0.663 [b]
Height (cm), mean (SD)	169.4	(10.7)	171.7	(8.5)	174.6	(8.8)	171.6	(8.7)	0.252 [b]
BMI, mean (SD)	28.9	(5.8)	27.9	(6.7)	26.2	(3.0)	28.5	(4.6)	0.268 [b]

[a] Chi-square test [b] ANOVA

At angiography there were statistically highly significant differences regarding final TIMI flow (after intervention) with highest percentage of TIMI flow III in Group A, B and C but least in Group D. Meanwhile, there were significant statistical differences regarding final TIMI flow 0; where highest percentage of TIMI flow 0 (No-flow) in Group D and group C and least in Group A and B as shown in table (2).

Table (2): Initial and final TIMI flow after intervention

TIMI flow	Group								p-value
	PPCI (n=26)		Pharmacoinvasive (n=26/gp)						
			(3-10 h)		(10-17 h)		(17-24 h)		
	n	(%)	n	(%)	n	(%)	n	(%)	
Initial									
0	17	(68.0)	18	(69.2)	23	(88.5)	19	(73.1)	
1	9	(32.0)	3	(11.5)	2	(7.7)	4	(15.4)	0.056
2	0	(0.0)	1	(3.8)	0	(0.0)	0	(0.0)	
3	0	(0.0)	4	(15.4)	1	(3.8)	3	(11.5)	
Final									
0	0	(0.0)	2	(7.7)	5	(11.5)	6	(19.2)	
1	1	(3.8)	0	(0.0)	1	(0.0)	3	(7.7)	0.001
2	4	(15.4)	4	(15.4)	3	(3.8)	5	(23.1)	
3	21	(84.0)	20	(76.9)	17	(84.6)	12	(50.0)	

As regards other major adverse cardiac events, there was no statistical significant difference in the incidence of re-infarction, cerebro-vascular accidents and significant arrhythmias. However there was statistically significant

difference as regards incidence of severe and life threatening bleeding with lowest incidence among groups (A) and (B) patients, and highest in group (D) patients. There was also significant difference in the percentages of resuscitated cases in between groups, highest percentage in group (D) and lowest in group (A) as shown in table (3).

Table (3): Major adverse cardiac events per group

Adverse event	Group								p-value [a]
	PPCI (n=26)		Pharmacoinvasive (n=26/gp)						
			(3-10 h)		(10-17 h)		(17-24 h)		
	n	(%)	n	(%)	n	(%)	n	(%)	
Arrhythmias	0	(0.0)	2	(7.7)	3	(11.5)	0	(0.0)	-
Re-infarction	1	(3.8)	1	(3.8)	1	(3.8)	1	(3.8)	1.00
Stroke	0	(0.0)	0	(0.0)	0	(0.0)	1	(3.8)	0.359
Severe/life threatening bleeding	0	(0.0)	0	(0.0)	0	(0.0)	1	(3.8)	0.019
Minor bleeding	5	(19.2)	5	(19.2)	2	(7.7)	1	(3.8)	0.199
Resuscitation	3	(12.0)	4	(17.1)	5	(19.2)	6	(23.1)	0.001

[a] Chi-square test

As regards left ventricular ejection fraction in the acute stage (immediately after intervention) of included patients, there were statistically significant differences with highest median in group (A) patients and least median in group D patients as illustrated in table (4).

Table (4): LVEF (%) in acute stage per group

	Group								p-value [a]
	PPCI (n=26)		Pharmacoinvasive (n=26/gp)						
			(3-10 h)		(10-17 h)		(17-24 h)		
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)	
LVEF (%)	40.4	(11.3)	37.2	(12.5)	39.5	(14.8)	34.3	(9.6)	0.031

[a] ANOVA

Outcome of six month follow up:

As regards survival at 6 month follow up, there was statistically significant difference on testing in between groups with highest survival percentage in group (A) and (B) compared to group D as illustrated in **table (5).**

Table (5): Survival and cause of mortality after 6 months per group

	Group								p-value
	PPCI (n=26)		Pharmacoinvasive (n=26/gp)						
			(3-10 h)		(10-17 h)		(17-24 h)		
	n	(%)	n	(%)	n	(%)	n	(%)	
Survival in 6 months	23	89	22	87	20	81	17	72	0.037
Cause of mortality									
Syncope	0	(0.0)	0	(0.0)	0	0.0)	2	(28.6)	0.037
Stroke	1	(25.0)	1	(50.0)	2	(66.7)	3	(42.9)	
Chest pain	1	(25.0)	1	(50.0)	1	(33.3)	2	(28.6)	

As regards analysis of 6 month follow up of included patients, there were statistically non-significant differences regarding angina requiring revascularization of included patients. However there were statistically highly significant differences in between groups regarding symptomatic heart failure according to (NYHA functional class ≥ II), with highest percentage of cases in group D patients 66.7% as illustrated in table (6).

Table (6): Clinical outcomes of 6 months follow up

Clinical outcome	Group								p-value [a]
	PPCI (n=26)		Pharmacoinvasive (n=26/gp)						
			(3-10 h)		(10-17 h)		(17-24 h)		
	n	(%)	n	(%)	n	(%)	n	(%)	
Angina requiring hospitalization	4	(23.5)	3	(18.8)	4	(23.5)	6	(40.0)	0.575
Target lesion re-vascularization	0	(0.0)	1	(6.3)	0	(0.0)	3	(20.0)	-
Symptoms of CHF [†]	2	(11.8)	3	(18.8)	2	(11.8)	10	(66.7)	0.001*

[a] Chi-square test [*] Statistically significant at the 0.05 level

Patients who had pharmacoinvasive intervention within 17-24 h had significantly higher proportion of patients with symptoms of CHF than all other groups. There were also highly significant statistical differences in between groups regarding LVEF at 6 month follow up with least LVEF in group (D) patients and equal LVEF in group (A) and group (B) patients as illustrated in table (7).

Table (7): LVEF (%) after 6 months per group

	Group								
	PPCI (n=26)		**Pharmacoinvasive (n=26/gp)**						
			(3-10 h)		**(10-17 h)**		**(17-24 h)**		
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)	**p-value [a]**
LVEF (%) [†]	48.4	(10.4)	48.4	(10.4)	45.6	(8.6)	34.3	(8.7)	<0.001 [*]

[a] ANOVA [*] Statistically significant at the 0.05 level

[†] Patients who had pharmacoinvasive intervention within (17-24 h) had significantly lower mean LVEF than patients who had PPCI (Bonferroni adjusted p-value =0.001), patients who had pharmacoinvasive intervention within 3-10 h (Bonferroni adjusted p-value =0.001), as well as patients who had pharmacoinvasive intervention within 10-24 h (Bonferroni adjusted p-value =0.013)

DISCUSSION:

The mean age of enrolled patients was 54.24 ± 9.51 years. All cases enrolled in the pharmaco-invasive groups were given standardized fibrinolysis (streptokinase; protocol of 1.5 million IU over 30-60 min intravenously). The use of additional GP IIb/IIIa was left to the operator opinion whether intracoronary or intravenous administration after PCI. Our main objective was to study the early and 6-month outcomes of ST- elevation myocardial infarction patients according to the use of primary PCI and three different protocols of pharmaco-invasive reperfusion in the acute stage based on timing of PCI after thrombolytic therapy.

In STEMI, early routine PCI after fibrinolysis results in a reduction in the incidence of re-infarction, recurrent ischemia, and death or re-infarction. This early invasive strategy achieves these benefits without an increase in the incidence of stroke or major bleeding complications, and these benefits have been sustained in long-term follow-up. Updates to the American College of Cardiology, American Heart Association, and European Society of Cardiology STEMI guidelines reflect these findings **[(13)].**

Major Adverse Cardiac Events (MACE):

In our study**,** we found that patients randomized to coronary angiography with possible intervention in group (A) primary PCI, or after fibrinolysis in early hours after the event, which are group (B), group (C) and group (D) patients, benefited as regards primary outcome parameters. The four groups were associated with better survival rates in the acute stage **(P= 0.003)**, congestive heart failure and cardiogenic shock (Maximal Killip class ≥II) rates **(P= <0.015).** These findings were associated with increased incidence of severe and life threatening bleeding in group (D) when compared to group (A) patients. Additionally group (D) patients had the largest number of resuscitated cases compared to almost similar numbers in groups (A),(B)& (C) (**P = 0.001).** Re-infarction incidence was the same all through in the sample population **(P = 1.00).** CVA didn't show statistically significant variation **(P = 0.359).** These findings are in agreement with the results from TRANSFER MI trial as regards the acute stage outcome (MACE) except for re-infarction were early routine PCI patients benefited in TRANSFER MI. The TRANSFER MI trial investigated larger sample of patients. They randomized 1059 high-risk patients who had a myocardial infarction with ST-segment elevation and who were receiving fibrinolytic therapy at centers that did not have the capability of performing PCI to either standard treatment (including rescue PCI, if required, or delayed angiography) or a strategy of immediate transfer to another hospital and PCI within 6 hours after fibrinolysis. The main differentiating feature in our study was the lack of inclusion of patients based on high risk features e.g. Anterior STEMI, Inferior STEMI with at least one; systolic blood pressure < 100 mm Hg, Heart rate > 100 beats per minute, Killip class II or III … etc. Patients were enrolled in our study without being classified (failed or succeeded thrombolysis) in order to study the effect of timing of PCI after thrombolysis in pharmaco-invasive approach.

Left Ventricular Function:

As regards **LV function** in the acute stage, group (A) had the highest median LVEF; 40.4% with a range of (20 – 65) this was followed by group (B) 37.2% (15 – 65). Group (D) had the lowest median 34.3% (20 – 52) **(P-value < 0.031)**. LVEF findings were not addressed in landmark trials including the TRANSFER MI trial.

Thrombolysis in myocardial infarction (TIMI) flow:

Invasive assessments in all groups provided us with additional information where group A patients had the highest percentage of final TIMI flow III 21/26

(84%), and group D had the highest percentage of final no flow 12/26 (50%) **(P<0.001),** suggesting better final angiographic outcome with group A patients. These findings disagree with results from TRANFER-AMI, where there were no statistical significant variation between standard treatment and routine PCI after thrombolysis groups regarding final TIMI flow (in TRANSFER- AMI; Tenecteplase was the thrombolytic agent used and stents used were bare metal and drug eluting stents, but bare metal stents were the major number used) [(9)].

More conclusions could be driven from the association of invasive assessment results (final TIMI flow, **P-value <0.001)**, clinical assessment results (maximal Killip class during admission ≥ II); group (A) 8/26 (32%), group (B) 15/26 (57.7%), group C 14/26 (53.8%) and group D 20/26 (76.9%) **(P-value <0.015)** and echocardiographic assessment results (LVEF) (**P-value <0.001)**, which point toward clear benefit of group (A), group (B) and group (C) patients more than group (D) patients. So in our study only clinical end points in the acute stage agree with results from TRANSFER MI trial (30 days efficacy), and disagree with 6 months efficacy end points[(13)].

Severe and life threatening bleeding:

As regards severe and life threatening bleeding the general incidence of bleeding in our sample was 4.3% and statistically there was significant differences in between groups suggesting increase in the incidence of severe and life threatening bleeding in group (D) patients **(P value; 0.019)**. These findings are consistent with CARESS-In-AMI trial and TRANSFER MI trial results[(13)].

Accordingly patients referred to angioplasty as primary PCI, or after fibrinolysis who had angiography and angioplasty 3-17 hours after fibrinolysis namely with streptokinase, were associated with significantly better survival outcome in acute stage, Killip class status, better left ventricular function measured by EF by trans-thoracic echocardiography without increase in the incidence of severe and life threatening bleeding events, which could be explained by earlier and more efficient reperfusion of infarct related artery, better TIMI flow, vessel patency, and lesser need for glycoprotein II b/ III a inhibitors.

Follow up:

Survival: on 6 month follow up of the sample of patients, this study found survival differences between patients groups where groups (A), (B) and (C) patients had the best survival 89%,87% and 81% respectively, while group (D) patients had 72% **(P-value; 0.037).** No statistically significant differences were found regarding angina requiring hospitalization after discharge **(P-value 0.575)**. These findings proves that the benefits of early intervention (Groups A,B and C) were persistent beyond the acute stage i.e. 6 months survival follow up.

Chronic symptomatic heart failure: on the 6 months follow up, there was statistically significant high incidence of symptomatic heart failure (NYHA class ≥ II) in group (D) patients (66.7%) versus groups (A) and (B) that had 11.8% and 18.8% respectively **(P-value; <0.001).**

Ejection fraction showed the median 34% range of (25 – 55) in group (D) versus 48% (28 – 70) in group A and 48% (28 – 70) in group B **(P-value <0.001).**

So primary PCI and early PCI after fibrinolysis (3-17 hours) improved survival and EF in acute stage and at 6 month follow up and late PCI after fibrinolysis (Group D) impacted 6 month follow up LVEF, TLR and symptomatic heart failure when compared to early PCI in groups A & B.

The FAST MI trial demonstrated that when used early after the onset of symptoms (<220 min), a pharmaco-invasive strategy yielded in-hospital, 30-day, and 1-year survival rates that were comparable to those of primary PCI [(4)]**.** Also the STREAM (Strategic Reperfusion Early After Myocardial Infarction) investigators demonstrated comparable 30-day clinical outcomes when STEMI patients within 3 h of symptom onset received pre-hospital fibrinolysis a median of 100 min after the onset of symptoms was compared with primary PCI [(5)]**.** When comparing our results to those from SRTEAM and FAST MI trials, time targets and pre-hospital thrombolysis are the main differences, however conclusions regarding the benefits of early intervention after thrombolysis are the same. Moreover the LVEF findings in the acute stage and the 6 month follow up provided more evidence of benefits.

CONCLUSION

This Study showed that pharmaco-invasive strategy with early PCI after fibrinolysis within 24 hours constitutes a valid reperfusion strategy for patients presenting with ST elevation myocardial infarction, where primary PCI was not feasible, and that the best acute stage and 6 month outcome were achieved with performance of early coronary angiography and intervention within 3-17 hours after fibrinolysis.

Conflict of interest: The authors declared no conflict of interest.
Sources of funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.
Author contribution: Authors contributed equally in the study.

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