Assessment of the Efficacy of Thrombolysis (Metalase) in Management of Acute Myocardial Infarction in Relation to Time When it is Given After Onset of MI

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Abstract

Background : Thrombolysis remains the treatment of choice in ST-segment elevation myocardial infarction (STEMI). Efficacy of reperfusion therapy in (AMI) is strictly time-dependent. Most benefit is achieved with initiation of therapy within the first 60–90 min after onset of symptoms.

Objectives : The aim of this study is to show the efficacy of the thrombolysis in acute myocardial infarction (AMI) in relation to the time (hours) when it is given after the onset of myocardial infarction .

Methods : 56 patients with acute STEMI admitted to coronary care unite (CCU) of baquba teaching hospital were treated with thrombolytic therapy (metalase) in the period from 1st / October / 2009 to 30th / may / 2010 .We observe the beneficial changes that occur after metalase use in relation to the time at which it is given after onset of myocardial infarction (i.e. onset of characteristic chest pain).

Results : From 56 patients , (4) patients (7.1%) came with in 1st hour and they develop complete recovery , their ECG return to normal after thrombolysis, (23) patients (41%) came with in 1-6 h. , they develop partial recovery and they had decrease in ST-segment elevation after thrpombolysis, (29) patients (51.7%) came after 6h. were having no any benefit from thrombolysis and had no change in ECG after thrombolysis .

Conclusions : Thrombolysis if given early in the 1st few hours (1-6 h.) is useful way to treat cases of STEMI , as it decrease infarct size and decrease morbidity and mortality .

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Introduction

Plaque rupture and thrombus formation play a major role in the genesis of acute coronary occlusion .

The introduction of fibrinolytic (thrombolytic) therapy was a major advance in the treatment of acute ST elevation myocardial infarction (STEMI).[1]

It has been shown that intravenous thrombolysis in acute myocardial infarction (AMI) if given earlly reduces the infarct size, preserves ventricular function and reduces long and short-term mortality , it remains a fact that the ideal time window for treatment of 60–90 min after the onset of symptoms, called the ‘‘golden hour’.[2]

Primary percutaneous coronary intervention (PCI) is the preferred treatment for patients with ST-segment elevation myocardial infarction (STEMI), if it can be delivered in a timely manner by an experienced team . However, in rural areas with long transfer distances to PCI centers primary PCI cannot be performed within the recommended time limits so thrombolysis remains the treatment of choice. [3]

Acute myocardial infarction was defined as the presence of at least two of three characteristics: ischemic cardiac pain for ≥30 min, ST segment elevation of ≥1 mm in two or More leads or ST depression of at least 2 mm with tall R waves in V1–V3, and significant rise in cardiac enzymes (elevated creatine kinase [CK] with MB fraction 4% or more of total CK). The MIs were labeled anterior, inferior and other based on ECG findings. Other included lateral and true posterior wall MIs. Failure of reperfusion was defined as less than 50% resolution of ST segment elevation at 90 min following the start of thrombolytic therapy .[4]

The major action of thrombolytic therapy is to reestablish patency of the infarct-related artery and to achieve perfusion of the supplied myocardium.[5]

Resolution of ST segment elevation after fibrinolytic therapy has been considered a marker of epicardial and micro-vascular and tissue-level reperfusion.[6]

Methods

We include in this study (56) patients with acute STEMI admitted to coronary care unite (CCU) of baquba teaching hospital and were treated with thrombolytic therapy metalase over the period from 1st / October / 2009 to 30th / may / 2010 .We depend in diagnosing acute STEMI , 2 criteria ,1st prolonged chest pain ≥ 30 min. , 2nd ST segment elevation in ECG .We observe response to therapy in relation with time after onset of MI.

We register the duration since beginning of chest pain till thrombolysis treatment as shown in table -1 , we register type of STEMI as shown in table -2 ,and we register the response to thrombolysis therapy clinically as relief of chest pain and ST segment elevation resolution as shown in table -3 .

Results

From 56 patients 4 patients (7.1%) came with in 1st hour(h.) after onset of MI and had complete infarct reversal to normal i.e. disappearance of ST segment elevation and no Q wave appearance .

23 patients (41%) came with in 1-6 h. and had ST segment elevation regression more than 50% i.e. decrease infarct size but they develop Q wave .

19 patients came with in 6-12 h., 10 patients came with in more than 12 h.,and those 2 groups i.e. 29 (51.7%) were having no clinical and ECG improvement and no response to thrombolysis with persistence of STsegment elevation and development of Q wave . As shown in table -3 .

Table (1) : Duration between chest pain Beginning and initiation of thrombolysis.

DURATION	NO.
1 h. and less	4
1-6 h.	23
6-12 h.	19
12 h. and more	10

Table (2) : Types of MI**.**

TYPES OF MI	NO.	%
Extensive anterior	23	41%
inferior	21	37.5%
anterior	10	17.8%
Infero-latral	1	1.7%
Infero-posterior	1	1.7%
Total	56	100%

Table (3) : Response to thrombolytic therapy.

RESPONSE TO THROMBOLYSIS	NO.	%	TIME
No change	29	51.7%	More than 6h
ST segment elevation resolution	23	41%	1-6h
Return to normal	4	7.1%	Less than 1h
Total	56	100%	

Discussion

Those patients with relatively good response to thrombolysis i.e. decrease in ST segment elevation were only (23) patients i.e. (41%) and they were those who came with in the period 1-6 h. after onset of chest pain of MI.

Those with no response to thrombolysis were (29) i.e. (51.7%) they did not have any improvement in ECG changes and they were those who came more than 6h after onset of chest pain of MI .

This was similar to what it was found in the canadian study , english and german studies in which those who receive thrombolysis with in 1st h. improve totally , while those came with in 6 h. improve parcially ,those who came after 6 h. were having nearly no response .[1,2,5]

This means that early thrombolysis with in (1 – 6) h. after onset of MI give good result in treating acute STEMI to decrease infarct

size, preserve good left ventricular function and improve survival .

Conclusion

Early thrombolytic therapy after acute STEMI especially with in the 1-6 hour of beginning of chest pain can reverse events and preserve myocardium , decrease short and long term morbidity and mortality from acute MI . So it is recommended to transfer patients with acute MI rapidly to CCU to receive thrombolysis as early as possible to decrease infarct size , preserve myocardium and to decrease morbidity and mortality .

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