Original Article

Early Assessment of Outcome by ST Segment Elevation after Acute Myocardial Infarction

Cardiology

1. Qazi Mehfooz ul Haq 2. Nazir Ahmed 3. Johar Ali 4. Adnan Ijaz 5. A. Hamid 6. Muhammad Sabir 7. Musaab Hamid

1. Prof. of Medicine, FM&DC, Abbotabad 2. Assoc. Prof. of Medicine, FM&DC, Abbotabad 3. Prof. of Surgery, FM&DC, Abbotabad 4. Asstt. Prof. of ENT, FM&DC, Abbotabad 5. Prof. of Forensic Medicine, IM&DC, Sialkot 6. Prof. of Anatomy, IM&DC, Sialkot 7. Medical Officer, Islam Dental College Sialkot

ABSTRACT

Objective: Early assessment of outcome by ST segment elevation after acute myocardial infarction.
Study Design: Observational study
Place of study: This study was conducted at Shaheena Jamil Teaching Hospital Abbotabad & Islam Teaching Hospital Sialkot from 1st January 2012 to 30th April 2013.
Material and Methods: 160 cases of acute myocardial infarction were randomly selected from the patients attending to OPD & emergency of Shaheena Jamil Teaching Hospital Abbotabad &Islam Teaching Hospital Sialkot & their peripheral Districts.
Results: During the study period, 160 patients met the criteria for inclusion & were given thrombolytic therapy. Out of these, 136 (85%) patients were males & 24 (15%) patients were females. Mean age at the time of presentation was 51.0 tears. 91 (56.8) patients had acute anterior myocardial infarction, 58 (36.2%) had acute inferior myocardial infarction & 11 (6.8%) patients had miscellaneous findings. Average time lapse was 4.03 hours from onset of the chest pain to administration of streptokinase. Group 'A' (complete ST segment resolution) included 67 (41.8%) patients while there were 49 (30.6%) patients in group 'B' (partial ST segment resolution) & 44 (27.5%)patients on group 'C' (no ST segment resolution)
Conclusion: The ST segment was raised in all of the acute myocardial infarction cases. But ST segment was resolved in patients in which streptokinase injection was given 4 to 5 hours back.
Key Words: Acute myocardial infarction, Streptokinase, Heprin, ST segment.

INTRODUCTION

Acute myocardial infarction is one of the leading cause of death in our country as well as all over the world. The most important development in this context has been the restoration of coronary blood flow by lysis of the obstructing thrombus, which can be achieved by the administration of early thrombolytic therapy. Early reperfusion limits the size of acute myocardial infarction & improves left ventricular function & prognosis. After a long period of ischemia, the un perfused myocardium is thought to be damaged beyond the repair stage & reperfusion is therefore not helpful in myocardial salvage[1,2,3.]

With the advent of thrombolytic therapy with some noninvasive methods became improve, both for prognosis & further management of the patient. angina relief, enzyme release acceleration & ST segment normalization are related to coronary artery re-perfusion & prognosis[4,5,6]. Out of these, a highly promising strategy is to assess the degree of resolution in ST segment elevation on repeated ECG monitoring following thrombolytic therapy, Differences in degree of ST segment elevation at 4 hours after thrombolytic therapy may predict outcome & may help in timely screening of patient for appropriate therapeutic intervention[7,8]. Patient with complete ST segment resolution may be considered for early discharge & patient with no ST segment resolution may be candidates for an early invasive approach or additional thrombolytic therapy[9,10,11].

Early resolution of ST-segment elevation is an indicator of final infarct size and clinical outcomes[12,13]. Whether this correlation is an expression of initial infarct characteristics or degree of myocardial salvage achieved with reperfusion therapy is un clear Data from a small prospective study suggested that use of two cutoff points for three different levels of ST segment resolution 3 h after the start of thrombolysis may be an efficient way to predict outcome in an individual patient[14,].

MATERIALS AND METHODS

One hundred & sixty (160) cases of acute myocardial infarction were selected attending to Shaheena Jamil Hospital Abbotabad & Islam Teaching Hospital Sialkot.

RESULTS

During the study period, 160 patients met the criteria for inclusion & were given thrombolytic therapy. Out of these, 136 (85%) patients were males & 24 (15%) patients were females. Mean age at the time of

presentation was 51.0 tears. 91 (56.8) patients had acute anterior myocardial infarction, 58 (36.2%) had acute inferior myocardial infarction & 11 (6.8%) patients had miscellaneous findings. Average time lapse was 4.03 hours from onset of the chest pain to administration of streptokinase. Group 'A' (complete ST segment resolution) included 67 (41.8%) patients while there were 49 (30.6%) patients in group 'B' (partial ST segment resolution) & 44 (27.5%)patients on group 'C' (no ST segment resolution).

Table No.1: Inclusion criteria.

Sr. No	Changes
1	Ischemic chest pain for at least 30 minutes with no more than 12 hours elapsed since the onset of chest pain.
2	ECG changes of ST segment elevation of at least 2 millimeters in 2 or more leads.
3	ECG diagnosis supplemented by rise in the blood cardiac enzymes.

Acute anterior myocardial infarction: Included patients of anterior, an trio-lateral, antrioseptal & lateral acute myocardial infarction. There were total 91 (56.8%) patients of anterior infarction with 39 patients in group 'A', 28 patients in group 'B' & 24 patients in group 'C'

Acute inferior myocardial infarction: Include patients of inferior, inferolateral, inferoposterior, poster & right ventricular infarction. There were 58 (36.2%) patients of inferior myocardial infraction with 23 patients in group 'A', 18 patients in group 'B' & 17 patients in group 'C'.

Miscellaneous: Include patients with miscellaneous findings. There were total 11 (6.8%) patients of this type with 5 patients in group 'A' & 3 patients each in group 'B' & 'C'.

Age: The means age of patients at the time of presentation was 51.0 years. Mean age of patients in group 'A' was 50.9 years, while it was 51.5 years

Table No. 2: ST segment elevation in three groups.

Sr. No	ST segment elevation	Group A		Group B		Group C		Total	
		n	%	n	%	n	%	n	%
1	< 2 mm	5	7.4	2	4.0	1	2.2.	8	5.0
2	2-5 mm	13	19.4	5	10.2	4	9.0	22	13.7
3	5 – 10 mm	29	43.2	23	46.9	19	43.1	71	44.3
4	> 10 mm	20	29.8	19	38.7	20	45.4	59	36.8
5	Total	67	100	49	100	44	100	160	100

Table No. 3: **ST segment elevation resolution in three groups.**

Sr. No	Group	ST segment resolution	% of ST segment elevation resolution	Total patients N	%
1	Group 'A'	Complete	>or =70%	67	41.8
2	Group 'B'	Partial	70% to > or = 30 %	49	30.9
3	Group 'C'	No	30%	44	27.5

Table No. 4: **Clinical outcome of patient (of acute myocardial infarction treated with thrombolytic therapy) in the present study.**

Sr. No	Event	Group 'A'		Group 'B'		Group 'c'		Total	
		n	%	n	%	n	%	n	%
1	Angina	7	10.4	8	16.3	12	27.2	27	16.8
2	Re-infarction	2	2.9	2	4.0	5	11.3	9	5.6
3	LVF	5	7.4	6	12.2	9	20.4	20	12.5
4	Hypotension	6	8.9	6	12.2	9	20.4	21	13.1
5	Complete heart block	4	5.9	5	10.2	5	11.3	14	8.7
6	In- hospital mortality	6	8.9	5	10.2	7	15.9	18	11.2

LVF = Left ventricular failure.

in group 'B' & 50.6 years in group 'C' patients.

Gender: In the present study, 136 (85%) patients were males & 24 (15%) patients were females. In comparison, there were 70.4% males in the GISSI-2 trail & 72.6% males in the MILIS study (Geoffrey, et al., 1990)

Rise in serum creatine kinase levels: Patient in group 'A' had mean peak elevation of creatine kinase (CK) at 8.7 hours. In group 'B' patients had mean peak elevation of CK at 10.2 hours & in group 'C' at 15.0 hours. There was early peak of CK level in group 'A" patients as compared to group 'C' patients.

ST segment elevation resolution: 67 (41.8%) patients, with complete ST segment elevation resolution, were included in group 'A' group 'B' with partial ST segment elevation resolution included 19 (30.6%) patients & group 'C' with no ST segment elevation resolution included 44 (27.5%) patients (Table No. 3).

DISCUSSION

The present study shows that prognosis was much better in patients with complete ST segment elevation resolution. ST segment elevation is therefore a simple, noninvasive method, for early assessment of outcome in patients with acute myocardial infarction after thrombolytic therapy. In the GISSI-2 trial, patients with complete ST segment elevation resolution had lower incidence of combined end point of in-hospital mortality as compared to patients with no ST segment elevation resolution (16.2%) vs 22.9%, respectively). Thirty & 180-day mortality rates were also lower in patients with complete ST segment elevation resolution as compared to patients with no ST segment elevation resolution (3.5% & 5.7% vs 7.4% & 9.9% respectively[15,16.]

In another study[17,], mortality at 21 days was 2.2%, 3.4% & 8.6%, respectively, in patients with complete, partial & no ST segment elevation resolution, three fours after thrombolytic therapy. In the same study, the ejection fraction was 60%, 53% & 49% respectively, in patients with complete, partial & no St segment elevation resolution. No ST segment elevation resolution was found to be the most powerful independent predictor of early mortality[18].

CONCLUSION

The ST segment was raised in all of the acute myocardial infarction cases. But ST segment was resolved in patients in which streptokinase injection was given 4 to 5 hours back.

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Address for Corresponding Author:
Qazi Mehfooz ul Haq,
Professor and HOD Medicine,
Frontier Medical & Dental College,
Abbotabad
Cell No.: 03335040950