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# 'Prediction of ST Elevation Resolution on the basis of Time Interval of onset of Chest Pain to Intervention (Total Ischemia Duration) among AMI (Acute myocardial infarction) Patients undergoing PCI (Percutaneous coronary intervention)'

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*In 1969 it was demonstrated that myocardial ischemic injury after coronary artery occlusion is not fixed but can be influenced profoundly by altering the balance between myocardial oxygen supply and demand[1]. In experiments with occluded coronary arteries, the magnitude of ST segment elevation correlated well with subsequent depression of myocardial creatine kinase activity and with evidence of myocardial necrosis on histologic examination. The height of the ST segment elevation on ECG was, therefore, utilized as an index of the severity of ischemic injury[2,3].Analysis of ST segment resolution (STR) on electrocardiograms provides a simple means to document the success of epicardial reperfusion, and predict the short- and long-term prognosis of patients after STEMI. Resolution of ST segment elevation has alsobeen used as a tool to evaluate microvascular- and tissue-level perfusion.*

*Persistent elevation of ST segment after restoration of epicardial flow is indicative of incomplete myocardial reperfusion and confers a poorer prognosis[4,5].The extent of ST segment Elevation Resolution is a powerful tool in the evaluation of reperfusion therapy in patients with STEMI (ST elevation myocardial infarction)[6,7]. In both Fibrinolytic therapy and PCI, complete STR after the procedure has been correlated with decreased mortality, MACE (Major adverse cardiovascular events). Studies have also shown that complete STR correlates with higher myocardial salvage and a better left ventricular ejection fraction.Studies suggesting that ST resolution is a highly accurate predictor of infarct artery patency (positive predictive value 90%) but inaccurate for predicting IRA occlusion (negative predictive value approximately 50%)[8,9].Patients with anterior infarction develop significantly less STS resolution than those with inferior infarction, suggesting that STS resolution is a less accurate predictor of reperfusion among patients with anterior versus inferior MI[18].Patients with TIMI grade 3 flow demonstrate significantly greater STS resolution than patients with TIMI grade 2 flow[8].*

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## I. Aims and objectives

- To predict ST Segment Elevation Resolution at 90 minutes of Intervention in Acute MI Pts undergoing PCI on the basis of time duration of Total Ischemic Interval (Onset of chest pain to Intervention) and other independent variables like age, gender, medical comorbidities (RFs, Risk factors), EF, TIMI Flow.
- To determine the difference in ST Segment Resolution among 3 different groups of patients-

1.Those who reported after 24 hours of chest pain (OWP, out of window period) Followed by PCI for appropriate indications

2.Those who reported within window period of chest pain

Thrombolysis followed by Rescue PCI for appropriate indications

3. Primary PCI

## II. Methodology

Type of study- Hospital based Observational Stud

Duration- 1 Yr.

To diagnose patients with STEMI (>1 mm ST-segment elevation in ≥2 limb leads or >2 mm ST-segment elevation in ≥2 precordial leads). In case of posterior myocardial infarction >2 mm ST-segment depression in ≥2 precordial leads).All IWMI pts had right sided and posterior leads taken.ST segment analysis is conducted according to validated criteria with EP Calliper. ST segments were measured 20 ms after the end of the QRS complex and the TP segment was used as the isoelectric reference baseline.Maximum ST Segment Elevation is taken for comparison.Anterior Group- v1 to v6 with 1 and aVl.Inferior Group- 2,3, aVf and rV4,

rV5, rV6 and v7, v8, v9.Complete STR was defined as >70% STR or <70% without residual ST-segment elevation (<1 mm in non-anterior leads and <2 mm in anterior leads).

**Inclusion criteria**- 150 Acute MI Pts. Undergoing PCI are included to predict ST Segment Elevation Resolution on the basis of time interval of Total Ischemic Duration (Chest pain to Intervention) and Other independent factors like age, gender, medical comorbidities, EF, TIMI Flow.

**Exclusion criteria**- Patients were excluded in case of a history of myocardial infarction in the same vascular territory, if the ECG could not be used to measure STR (left bundle branch block, pacemaker or ventricular rhythm). Patients who already showed complete reperfusion with TIMI 3 flow at the start of the PCI procedure and/or resolved symptoms with complete STR. And pts who refused consent.

## III. Statistical analysis

Continuous data are summarized in the form of Mean and SD difference and means of 2 different groups are analysed using Student t Test, for 3 different groups ANOVA is used.Correlation coefficient is used to detect correlation between baseline ST Segment Elevation and 90 minutes Post-PCI ST Segment Elevation.Continuous Data are expressed in the form of Proportions. Difference in proportions is analysed using Chi Square test.The level of confidence is 95% for all statistical analysis with P Value<.05 is kept significant. Statistical analysis is conducted using SPSS 24.

## IV. Results

**Table-1**

| | | AWMI(N=73) | | IWMI(N=77) | | Total(N=150) | | P value |
|---|---|---|---|---|---|---|---|---|
| | | No.number | % | No | % | No | % | |
| Age Group(Yrs) | 30 to 40 | 4 | 5.48 | 2 | 2.60 | 6 | 4.00 | |
| | 41 to60 | 50 | 68.49 | 50 | 64.94 | 100 | 66.67 | 0.385NS |
| | 61 to 80 | 19 | 26.03 | 22 | 28.57 | 41 | 27.33 | |
| | >80 | 0 | 0.00 | 3 | 3.90 | 3 | 2.00 | |
| | Mean±Sd | 55.71 | 9.77 | 57.73 | 9.93 | 56.75 | 9.87 | 0.21NS |
| Gender | F | 18 | 24.66 | 21 | 27.27 | 39 | 26.00 | 0.85NS |
| | M | 55 | 75.34 | 56 | 72.73 | 111 | 74.00 | |

Abbreviations, Yrs- years, No- number, NS- non significant

**Table-2**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Risk Factors | PAD | | 0.00 | 1 | 1.30 | 1 | 0.67 | |
| | DM | 6 | 8.22 | 11 | 14.29 | 17 | 11.33 | <.03 S |
| | HT | 33 | 45.21 | 41 | 53.25 | 74 | 49.33 | NS |
| | FH | 2 | 2.74 | 1 | 1.30 | 3 | 2.00 | NS |
| | Dyslipidemia | 6 | 8.22 | 5 | 6.49 | 11 | 7.33 | NS |
| | CVA | 1 | 1.37 | 1 | 1.30 | | 0.00 | NS |
| | Smoking/ Tobacco | 50 | 68.49 | 50 | 64.94 | 100 | 66.67 | NS |
| | CAD | 2 | 2.74 | 1 | 1.30 | 3 | 2.00 | NS |

Abbreviations, PAD- peripheral artery disease, DM- diabetes mellitus, HT- hypertension, FH- family history of premature atherosclerosis, CVA- cerebrovascular accident, CAD- coronary artery disease, S- significant

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 1.37 | 2 | 2.60 | 3 | 2.00 | |
| | 1 | 48 | 65.75 | 47 | 61.04 | 95 | 63.33 | |
| | 2 | 21 | 28.77 | 25 | 32.47 | 46 | 30.67 | |
| | 3 | 2 | 2.74 | 2 | 2.60 | 4 | 2.67 | |
| No of risk factors | 4 | 1 | 1.37 | 1 | 1.30 | 2 | 1.33 | 0.96NS |
| | Primary | 24 | 32.88 | 27 | 35.06 | 51 | 34.00 | |
| | Rescue | 26 | 35.62 | 21 | 27.27 | 47 | 31.33 | |
| | ADHOC | 23 | 31.51 | 29 | 37.66 | 52 | 34.67 | 0.53NS |
| | D to B time (Mean ±SD) | 72.08 min | 9.32 | 68.89 min | 16.25 | 70.39 min | 13.41 | .401NS |
| | **TID** | | | | | | | |
| | <12 hrs | 21 | 28.77 | 22 | 28.57 | 43 | 28.67 | |
| | 12 hrs to 24 Hrs | 28 | 38.36 | 24 | 31.17 | 52 | 34.67 | |
| | >24 Hrs | 24 | 32.88 | 31 | 40.26 | 55 | 36.67 | 0.57NS |

**Table 3**.

Abbreviations, ADHOC- Ad hoc PCI, TID- total ischemia duration, D to B- door to balloon time, min- minutes, Hrs- hours, PCI- percutaneous coronary intervention

| | | AWMI(N=73) | | IWMI(N=77) | | Total(N=150) | | P value |
|---|---|---|---|---|---|---|---|---|
| | | No | % | No | % | No | % | |
| | STR | 31 | 42.47 | 33 | 42.86 | 64 | 42.67 | 0.91NS |
| Mean ST elevation | Baseline | 4.40 mm | | 3.40 mm | | 4.14 mm | | .041 |
| | post procedural | 2.18 mm | | 2.1 mm | | 2.13 mm | | .029 |
| | Q wave | 49 | 67.12 | 34 | 44.16 | 83 | 55.33 | 0.008S |
| | **EF%** | 37.36 | | 45.36 | | 41.47 | | <0.001S |
| | AK | 42 | 57.53 | 53 | 68.83 | 95 | 63.33 | |
| | HK | 31 | 42.47 | 23 | 29.87 | 54 | 36.00 | |
| | N0 RWMA | | 0.00 | 1 | 1.30 | 1 | 0.67 | 0.18NS |

**Table-**4.Abbreviations, AWMI- anterior wall myocardial infarction, IWMI- inferior wall myocardial infarction, STR- ST segment elevation resolution, EF- ejection fraction, AK- akinetic, HK- hypokinetic, RWMA- regional wall motion abnormality

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No of vessels | 1 | 60 | 82.19 | 56 | 70.13 | 114 | 76.00 | |
| | 2 | 9 | 9.59 | 12 | 20.68 | 21 | 17.33 | |
| | 3 | 7 | 8.22 | 5 | 5.19 | 12 | 6.67 | 0.046NS |
| | d | 0 | 0.00 | 1 | 1.30 | 1 | 0.67 | |
| | M | 7 | 9.59 | 18 | 23.38 | 25 | 16.67 | |
| LAD | P | 62 | 84.93 | 2 | 2.60 | 64 | 42.67 | |
| | D | 3 | 94.52 | 25 | 28.57 | 28 | 60.67 | |
| | Lcx diffuse | 3 | 4.11 | | 0.00 | 3 | 2.00 | |
| LCX | p | 1 | 1.37 | 10 | 12.99 | 11 | 7.33 | |
| | d | 3 | 4.11 | 2 | 2.60 | 5 | 3.33 | |
| | p | 2 | 2.74 | 33 | 42.86 | 35 | 23.33 | |
| RCA | m | 4 | 5.48 | 7 | 9.09 | 11 | 7.33 | |
| | Thrombus | 63 | 86.30 | 53 | 68.83 | 116 | 77.33 | 0.076NS |
| | 1 | 4 | 5.48 | 1 | 1.30 | 5 | 3.33 | 0.22NS |
| | 2 | 10 | 13.70 | 7 | 9.09 | 17 | 11.33 | |
| TIMI | 3 | 59 | 80.82 | 69 | 89.61 | 128 | 85.33 | |

**Table 5**.Abbreviations, LAD- left anterior descending, LCX- left circumflex, RCA- right coronary artery, TIMI- thrombolysis in myocardial infarction, P- proximal, M- mid, D- distal

| | Primary (N=51) | | Rescue(N=47NS) | | ADHOC(N=52) | | Total(N=150) | | P Value |
|---|---|---|---|---|---|---|---|---|---|
| Age groups(Yrs) | No | % | No | % | No | % | No | % | |
| 30 to 40 | 3 | 5.88 | 1 | 2.13 | 2 | 3.85 | 6 | 4.00 | |
| 41 to60 | 30 | 58.82 | 34 | 62.34 | 36 | 69.23 | 100 | 66.67 | |
| 61 to 80 | 15 | 29.41 | 12 | 25.53 | 14 | 26.92 | 41 | 27.33 | |
| >80 | 3 | 5.88 | 0 | 0.00 | 0 | 0.00 | 3 | 2.00 | 0.27NS |
| Mean±SD | 57.25±11.31 | | 57.06 | 8.840 | 55.96 | 9.37 | 56.75 | 9.87 | 0.77NS |
| Gender | No | % | No | % | No | % | | 0.00 | |
| F | 11 | 15.69 | 15 | 31.91 | 16 | 30.77 | 39 | 26.00 | |
| M | 40 | 84.31 | 32 | 68.09 | 36 | 69.23 | 111 | 74.00 | 0.11NS |
| Total | 51 | 100.00 | 47 | 100.00 | 52 | 100.00 | 150 | 100.00 | |

**Table -6.**Abbreviations, F- female, M- male

| Risk factors | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
|---|---|---|---|---|---|---|---|---|---|
| PAD | 1 | 1.96 | | 0.00 | | 0.00 | 1 | 0.67 | |
| DM | 10 | 19.61 | 2 | 4.26 | 5 | 9.62 | 17 | 11.33 | |
| HT | 22 | 48.14 | 24 | 51.06 | 28 | 53.85 | 74 | 49.33 | |
| FH | 2 | 3.92 | 1 | 2.13 | | 0.00 | 3 | 2.00 | |
| Dyslipidemia | 15 | 23.92 | 17 | 24.89 | 12 | 13.85 | 44 | 37.33 | |
| CVA | 2 | 3.92 | | 0.00 | | 0.00 | | 0.00 | |
| Smoking/ Tobacco | 31 | 60.78 | 31 | 65.96 | 34 | 65.38 | 96 | 64.00 | |
| CAD | 3 | 5.88 | | 0.00 | | 0.00 | 3 | 2.00 | .1NS |
| MI | | | | | | | | | |
| AWMI | 24 | 47.06 | 25 | 53.19 | 23 | 44.23 | 69 | 46.00 | |
| IWMI | 27 | 52.94 | 21 | 44.68 | 29 | 55.77 | 77 | 51.33 | 0.52NS |
| D to B time | 70.39±13.41 min | | | | | | | | |
| **TID** | | | | | | | | | |
| <12 hrs | 43 | 84.31 | 0 | 0.00 | 0 | 0.00 | 43 | 28.67 | |
| 12 hrs to 24 Hrs | 8 | 15.69 | 44 | 93.62 | 0 | 0.00 | 52 | 34.67 | |
| >24 Hrs | 0 | 0.00 | 3 | 6.38 | 52 | 100.00 | 55 | 36.67 | <0.001S |

**Table 7**

**Table-8** .Abbreviations, MI- myocardial infarction

| | Primary (N=51) | | Rescue(N=47NS) | | ADHOC(N=52) | | Total(N=150) | | P Value |
|---|---|---|---|---|---|---|---|---|---|
| **Max STE Baseline,** | **No** | **%** | **No** | **%** | **No** | **%** | **No** | **%** | |
| 1 | 2 | 3.92 | | 0.00 | | 0.00 | 2 | 1.33 | |
| avl | | 0.00 | 1 | 2.13 | | 0.00 | 1 | 0.67 | |
| 2/3 | 13 | 25.49 | 15 | 31.91 | 20 | 38.46 | 48 | 32.00 | |
| V2/v3 | 28 | 54.90 | 21 | 44.68 | 21 | 40.38 | 70 | 46.67 | |
| v4 | 6 | 11.76 | 10 | 21.28 | 11 | 21.15 | 27 | 18.00 | |
| v6 | 1 | 1.96 | | 0.00 | | 0.00 | 1 | 0.67 | |
| v8 | 1 | 1.96 | | 0.00 | | 0.00 | 1 | 0.67 | |
| **STR** | 41 | 80.39 | 20 | 42.55 | 3 | 9.77 | 64 | 42.67 | <0.001S |
| **Qwave** | 17 | 33.33 | 20 | 42.55 | 46 | 88.46 | 83 | 55.33 | <0.001S |
| **EF** | 43.61 | 5.23 | 41.11 | 4.701 | 39.69 | 5.09 | 41.47 | 5.25 | 0.1NS |
| AK | 17 | 33.33 | 28 | 59.57 | 50 | 96.15 | 95 | 63.33 | |
| HK | 33 | 64.71 | 19 | 40.43 | 2 | 3.85 | 54 | 36.00 | |
| NO RWMA | 1 | 1.96 | 0 | 0.00 | 0 | 0.00 | 1 | 0.67 | |

**Table 9.**Abbreviations, Max STE- maximum ST segment elevation

**Table-10,11**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Thrombus | 51 | 100.00 | 42 | 89.36 | 23 | 44.23 | 116 | 77.33 | <0.0015 |
| TIMI | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 1 | | 0.00 | 2 | 4.26 | 3 | 5.77 | 5 | 3.33 | |
| 2 | 6 | 11.76 | 6 | 12.77 | 5 | 9.62 | 17 | 11.33 | |
| 3 | 45 | 88.24 | 39 | 82.98 | 44 | 84.62 | 128 | 85.33 | 0.54NS |
| No of vesseles | | | | | | | | | |
| 1 | 36 | 76.60 | 38 | 73.08 | 40 | 78.43 | 114 | 76.00 | |
| 2 | 12 | 25.53 | 6 | 11.54 | 8 | 15.69 | 26 | 17.33 | |
| 3 | 3 | 6.38 | 3 | 5.77 | 4 | 7.84 | 10 | 6.67 | 0.68NS |
| LAD | | | | | | | | | |
| d | | 0.00 | | 0.00 | 1 | 1.92 | 1 | 0.67 | |
| m | 12 | 23.53 | 5 | 10.64 | 8 | 15.38 | 25 | 16.67 | |
| p | 19 | 37.25 | 23 | 48.94 | 22 | 42.31 | 64 | 42.67 | |
| LCX | | | | | | | | | |
| d Lcx | 4 | 7.84 | 11 | 23.40 | 13 | 25.00 | 28 | 18.67 | |
| Lcx Diffuse | 3 | 5.88 | | 0.00 | | 0.00 | 3 | 2.00 | |
| p Lcx | 7 | 13.73 | 3 | 6.38 | 1 | 1.92 | 11 | 7.33 | |
| RCA | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| d | 1 | 1.96 | 0 | 0.00 | 4 | 7.69 | 5 | 3.33 | |
| p | 15 | 29.41 | 9 | 19.15 | 11 | 21.15 | 35 | 23.33 | |
| m | 6 | 11.76 | 2 | 4.26 | 3 | 5.77 | 11 | 7.33 | |

| AWMI | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Primary(N=24) | | Rescue (N=26) | | ADHOC(N=23) | | Total(N=73) | | P Value |
| | No | % | No | % | No | % | No | % | |
| **Thrombus** | 24 | 100.00 | 25 | 96.15 | 14 | 60.87 | 63 | 86.30 | <0.001S |
| **TIMI** | | | | | | | | | |
| 1 | 0 | 0.00 | 2 | 7.69 | 2 | 8.70 | 4 | 5.48 | |
| 2 | 2 | 8.33 | 4 | 15.38 | 4 | 17.39 | 10 | 13.70 | |
| 3 | 22 | 91.67 | 20 | 76.92 | 17 | 73.91 | 59 | 80.82 | 0.324NS |
| **STR** | 19 | 79.17 | 12 | 46.15 | 2 | 9.00 | 31 | 42.47 | <0.001S |
| STE Baseline, mm | 4.88 | | 4.12 | | 4.10 | | 4.40 | | 0.01S |
| STE post procedure | 1.83 | | 1.98 | | 2.36 | | 2.18 | | 0.03S |
| **Q wave** | 10 | 31.67 | 16 | 61.54 | 23 | 90.00 | 49 | 67.12 | <0.001S |
| AK | 7 | 29.17 | 14 | 53.85 | 21 | 91.30 | 42 | 57.53 | |
| HK | 17 | 70.83 | 12 | 46.15 | 2 | 8.70 | 31 | 42.47 | |
| No RWMA | 1 | 3 | 0 | 0 | | 0 | 1 | 1.3 | <0.001S |

**Table-12.**Abbreviations, mm- millimetre

**Table13.**

| IWMI | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Primary(N=27) | | Rescue(N=21) | | ADHOC(N=29) | | Total(N=77) | | |
| **Thrombus** | 27 | 100.00 | 17 | 80.95 | 9 | 31.03 | 53 | 68.83 | <0.001S |
| **TIMI** | | | | | | | | | |
| 1 | 0 | 0.00 | 0 | 0.00 | 1 | 3.45 | 1 | 1.30 | |
| 2 | 4 | 14.81 | 2 | 9.52 | 1 | 3.45 | 7 | 9.09 | |
| 3 | 23 | 85.19 | 19 | 90.48 | 27 | 93.10 | 69 | 89.61 | 0.44NS |
| **STR** | 22 | 81.48 | 8 | 38.10 | 3 | 10.34 | 33 | 42.86 | <0.001S |
| STE Baseline, mm | 3.87 | | 3.48 | | 3.24 | | 3.90 | | 0.212NS |
| STE post procedure | 1.81 | | 1.90 | | 1.93 | | 1.88 | | 0.86NS |
| **Q wave** | 7 | 15.93 | 4 | 22.05 | 23 | 79.31 | 34 | 44.16 | <0.001S |
| AK | 10 | 27.04 | 14 | 66.67 | 29 | 100.00 | 53 | 68.83 | |
| HK | 16 | 69.26 | 7 | 33.33 | 0 | 0.00 | 23 | 29.87 | |
| No RWMA | 1 | 3.70 | 0 | 0 | 0 | 0 | 1 | 1.34 | <0.001S |

**Table-14,15**

| No of Vessels | | STE Baseline | STE post procedure |
|---|---|---|---|
| 1(N=110) | N | 114 | 114 |
| | Mean | 4.14 | 2.03 |
| | SD | 1.552 | .867 |
| 2(N=26) | N | 26 | 26 |
| | Mean | 4.36 | 2.37 |
| | SD | 1.076 | .593 |
| 3(N=10) | N | 10 | 10 |
| | Mean | 4.70 | 2.50 |
| | SD | 1.636 | 1.080 |
| Total | N | 150 | 150 |
| | Mean | 4.24 | 2.13 |
| | SD | 1.486 | .848 |
| P Value | | .041 | .013 |

| No of Risk Factors | | STE Baseline | STE post procedure |
|---|---|---|---|
| 0 | N | 3 | 3 |
| | Mean | 4.00 | 2.00 |
| | Std. Deviation | 1.000 | 0.000 |
| 1 | N | 95 | 95 |
| | Mean | 4.01 | 1.99 |
| | Std. Deviation | 1.491 | .878 |
| 2 | N | 46 | 46 |
| | Mean | 4.25 | 2.03 |
| | Std. Deviation | 1.393 | .741 |
| 3 | N | 4 | 4 |
| | Mean | 4.75 | 2.75 |
| | Std. Deviation | .957 | 1.500 |
| 4 | N | 2 | 2 |
| | Mean | 7.00 | 2.90 |
| | Std. Deviation | 2.828 | .707 |
| Total | N | 150 | 150 |
| | Mean | 4.24 | 2.13 |
| | Std. Deviation | 1.486 | .848 |
| P Value | | .047 | .044 |

**Table-16**

| | Primary | | | Rescue | | | ADHOC | | | P Value |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean STE | Std. Deviation | N | Mean STE | Std. Deviation | N | Mean STE | Std. Deviation | |
| <12 hrs | 32 | 4.60 | 2.449 | 10 | 4.50 | 2.135 | | | | 0.96NS |
| 12 hrs to 24 Hrs | 19 | 4.48 | .961 | 45 | 4.40 | 1.089 | | | | 0.75NS |
| >24 Hrs | | | | | | | 44 | 4.15 | .905 | |
| Total | 51 | 4.55 | 1.471 | 55 | 4.44 | 1.486 | 44 | 4.15 | 1.592 | |
| P Value | | 0.442NS | | | 0.07NS | | | | | |

**Table-17**

| TIMI | | Age, Yrs | TID, Hrs | EF, % | STE, mm |
|---|---|---|---|---|---|
| 1 | N | 5 | 5 | 5 | 5 |
| | Mean | 69.20 | 29.6 | 37.80 | 4.16 |
| | SD | 9.445 | 6.98 | 4.147 | 1.9 |
| 2 | N | 17 | 17 | 17 | 17 |
| | Mean | 65.88 | 24.60 | 38.76 | 4.22 |
| | SD | 11.35 | 4.45 | 5.21 | 1.5 |
| 3 | N | 128 | 128 | 128 | 128 |
| | Mean | 55.44 | 21.70 | 41.97 | 4.29 |
| | SD | 9.06 | 3.96 | 5.16 | 1.6 |
| Total | N | 150 | 150 | 150 | 150 |
| | Mean | 56.75 | 28.40 | 41.47 | 4.20 |
| | SD | 9.87 | 13.41 | 5.25 | 1.56 |
| P Value | | .014S | .025S | .12NS | .24NS |

| Primary | | Age, Yrs | D to B time, min | EF, % |
|---|---|---|---|---|
| AWMI | N | 73 | 73 | 73 |
| | Mean | 55.71 | 72.08 | 38.36 |
| | SD | 9.77 | 9.32 | 4.02 |
| IWMI | N | 77 | 77 | 77 |
| | Mean | 57.73 | 69.89 | 44.36 |
| | SD | 9.93 | 16.25 | 2.67 |
| Total | N | 150 | 150 | 150 |
| | Mean | 56.75 | 70.39 | 41.47 |
| | SD | 9.87 | 13.41 | 5.25 |
| P Value | | .213NS | .401NS | 0.07NS |

**Table 18**

**Table19**

| IRA TIMI Flow with Total ischemia duration(including DTB time) with STR | | |
|---|---|---|
| TIMI 3- 36 Pts<br>Total ischemia duration(including DTB time) 16.9 Hrs<br>STR<br>Y- 32 Pts<br>N- 4 Pts | TIMI 3- 35 Pts<br>Total ischemia duration 18.2 Hrs<br>STR<br>Y- 27 Pts<br>N- 8 Pts | TIMI 3- 28 Pts<br>Total ischemia duration 29.3 Hrs<br>STR<br>Y- 8 Pts<br>N- 20 Pts |
| TIMI 2- 14 Pts<br>Total ischemia duration(including DTB time) 17.4 Hrs<br>STR<br>Y- 6 Pts<br>N- 8 Pts | TIMI 2- 15 Pts<br>Total ischemia duration 19.4 Hrs<br>STR<br>Y- 6 Pts<br>N- 9 Pts | TIMI 2- 15 Pts<br>Total ischemia duration 33.8 Hrs<br>STR<br>Y- 2 Pts<br>N- 13 Pts |
| TIMI 1- 3 Pts<br>Total ischemia duration(including DTB time) 18 Hrs<br>STR<br>Y- Nil<br>N- 3 Pts | TIMI 1- 2 Pts<br>Total ischemia duration 20 Hrs<br>STR<br>Y- Nil<br>N- 2 Pts | TIMI 1- 2 Pts<br>Total ischemia duration 38.1 Hrs<br>STR<br>Y- Nil<br>N- 2 Pts |

Abbreviations, IRA- infarct related artery, Y- yes, N- no

## V. Discussion-

Mean age of our cohort is 56.75± 9.87 Yrs.Predominantly male gender 74%.CAD RFs are smoking/tobacco and hypertension seen most commonly.Almost equal distribution of AWMI and IWMI groups 49% and 51% respectively.TID less than 12 hrs cohort has mainly Primary patients, while 12 to 24 hrs cohort has mainly Rescue patients, and more than 24 hrs cohort has AD Hoc PCI patients.The distribution of all three cohorts Primary, Rescue, and AD Hoc PCI has almost equal number of patients, 34% 31% 34% respectively.Mean EF 41.21% with almost 2/3 territories hypokinetic on Echo.SVD was most commonly found lesion in study cohort.Almost 80% of lesions were thrombotic.All vascular territories proximal diseased vessel was most common.

All baseline parameters are matched in AWMI and IWMI groups as well as Primary, Rescue, and AD Hoc groups.Mean TID in Primary group is 16.6 hrs, Rescue group is 21.4 hrs, and AD Hoc group 28.8 hrs.Mean D to B time in Primary cohort is 70.37 min with equal time in AWMI and IWMI groups.Mean STE was higher in Primary v/s Rescue v/s Ad Hoc cohorts without statistically significant difference.Similarly Mean STE was higher for AWMI v/s IWMI groups without statistically significant difference.Almost 2/3 patients in Primary group had STR, opposed to 50% patients in Rescue, and around 10% patients in AD Hoc groups.As age increased Mean STE increased proportionately with statistically significance. Similarly, STR rate also decreased same way.As number of RFs increased Mean STE increased proportionately with statistically significance. Similarly, STR rate also decreased same way.

As TIMI flow decreased Mean STE increased proportionately with statistically significance. Similarly, STR rate also decreased same way.There is a very close correlation between cardiac mortality and extent of ST

segment elevation resolution in patients with evolving myocardial infarction. Therefore, a larger extent of ST segment resolution may serve as a surrogate for improved survival[10,11]. In trials primarily designed to assess mortality differences, different extents of ST segment resolution may provide a sensitive measure of differential clinical benefits[12,13] The much larger number of ST segment resolution end points can provide statistically significant results with much less resources than would be needed for differences in mortality.

## VI. Summary

Extend of CAD and number of RFs is significantly related to STS Elevation.Lack of resolution correlates with TID as well as RFs.Total ischemia duration is main determinant for lack of STR which also relates with TIMI flow.

## VII. Limitations

Observational study so bias is likely.No follow up so correlation with CV Events (MACE) is not possible.Baseline ECG is taken admission ECG which may not reflect true extent of STE as symptoms start preceding admission.Stringent criteria for STR is used as 70%, which may miss some of the successful beneficiaries.Sometimes 90 min post procedure ECG may not show STR as after restoring epicardial coronary flow settlement of STE may lag behind which require continuous monitoring.Contribution of epicardial stenosis of coronary artery and microvascular dysfunction at myocardial level for STE separately cannot be made at present as microvascular function assessment during ACS is not feasible.

**Future directions**

As ECG is an inexpensive tool, contribution of STR in long term CV Events, this can be added to already available risk assessment modules like TIMI risk score for better risk stratifying such cohort.

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