Safety of Very Early (<3hours) Routine Percutaneous Coronary Intervention after Fibrinolysis in ST-segment Elevation Myocardial Infarction

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ABSTRACT

Background: Current ACC/AHA guidelines recommend fibrinolysis (FL) as the preferred reperfusion strategy for STEMI patients with expected delays of >120 minutes from first medical contact to PCI followed by transfer to a PCI center with angiography/PCI within 24-hours. Assessment of reperfusion prior to angiography may not be accurate based on clinical and ECG criteria alone.

Methods: The Minneapolis Heart Institute Level 1 MI program is a regional STEMI system with a standardized protocol where patients transferred from spoke hospitals with expected delays of >120 minutes to PCI receive a pharmacoinvasive (PI) therapy: half-dose FL, UFH, ASA and Clopidogrel with transfer for immediate PCI. Prospective registry data from the Level 1 database was analyzed to compare clinical outcomes related to the timing of PCI following FL - <60, 61-90, 91-120, >120 minutes. Patients transferred for PCI alone were available for comparison.

Results: From 01/03 to 12/15, 3453 STEMI patients were transferred from spoke hospitals for immediate PCI including 869 receiving FL. Pre-PCI FL >3 flow occurred in 71%. The majority of PI-treated patients underwent PI 61-90 (41%) or >91-120 (28%) minutes post-FL. Key clinical, time-to-treatment and outcomes are included in Table 1. There were no significant differences in mortality, bleeding, reinfarction or stroke related to timing of PCI between these 5 groups.

Conclusion: Very early PCI (<3hours) following FL in patients with expected delays to PCI is safe without increased MACE. Delaying angiography for 3-24 hours following FL may not be necessary and may result in delays to reperfusion in patients who fail to reperfuse, as well as increased recurrent ischemia and length of stay.

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Table 1. Demographics and Clinical Data of Patients Stratified by Time From FL to Angiography/PCI

<table>
<thead>
<tr>
<th>Time from FL to PCI</th>
<th>Number of STEMI (%)</th>
<th>Any TIMI Bleeding (%)</th>
<th>Any PCI TIMI 2/3 Flow (%)</th>
<th>Death at 30 days (%)</th>
<th>Pre-PCI Cardiogenic Shock (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;60 min</td>
<td>869 (24.9)</td>
<td>41.2</td>
<td>5</td>
<td>1.0</td>
<td>0.47</td>
</tr>
<tr>
<td>61-90 min</td>
<td>730 (21.3)</td>
<td>36.8</td>
<td>7</td>
<td>1.2</td>
<td>0.45</td>
</tr>
<tr>
<td>91-120 min</td>
<td>1205 (35.2)</td>
<td>30.8</td>
<td>5.5</td>
<td>1.7</td>
<td>0.54</td>
</tr>
<tr>
<td>&gt;120 min</td>
<td>659 (19.0)</td>
<td>35.6</td>
<td>7.4</td>
<td>2.6</td>
<td>0.74</td>
</tr>
</tbody>
</table>

DISCLOSURES

The authors have no disclosures to report.

Figure 1: Time Interval From FL to Angiography/PCI

Figure 2: Bleeding Rates Stratified by Time From FL to Angiography/PCI

Figure 3: Survival Stratified by Time From FL to Angiography/PCI

CONCLUSIONS

- Delaying angiography for 3-24 hours following FL may not be necessary and may result in delays to reperfusion in patients who fail to reperfuse.
- Very early PCI (<3 hours) following FL in patients with expected delays to PCI is safe without increased bleeding or MACE.
- Pre-PCI TIMI 2/3 flow was higher in PI treated patients, but decreased as time from FL to angiography/PCI became longer.
- Despite a significantly longer D2B time, PI patients had decreased mortality, although this likely was influenced by less pre-PCI cardiac arrest.