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Myocardial infarction is uncommon in young patients
Usually associated in good short- and long-term prognosis
No specific risk stratification validated

Main purpose = to assess the prognosis of young patients (< 40 years) after ST-segment Elevation Myocardial Infarction (STEMI) and to test the effectiveness of TIMI Score in predicting short- and long-term prognosis.
Background - Score TIMI

TIMI Risk Score for STEMI

Mortality at 30 d by STEMI TRS

Historical
- Age 65-74 2 pts
- >75 3 pts
- DM/HTN/Angina 1 pt

Exam
- SBP < 100 mmHg 3 pts
- HR > 100 bpm 2 pts
- Killip II – IV 2 pts
- Weight < 67 kg 1 pt

Presentation
- Anterior STE or LBBB 1 pt
- Time to Rx > 4hr 1 pt

Risk Score = Total (0-14)

Morrow DA, Circulation 2000; 102:2031-37
Methods - Study design and patient selection

- Retrospective study in the Jolimont Hospital
- Patients admitted in the Coronary Care Unit between 2000 and 2008 for ST-segment Elevation Myocardial Infarction (STEMI)
- < 40 years at the time of diagnosis
- Any reperfusion therapy (thrombolysis, PCI)
Methods - Data collection and endpoints

- Full data collected from medical files (discharge letters, case notes).
- If necessary contact with the cardiologist or the GP.

- Primary outcome:
  **Composite EP : Major Adverse CV events**
  - CV death
  - Re-MI
  - Re-ischemia
  - Hospitalization for CHF
## Results – Baseline data

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Patients (n=57)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years +/- SD)</td>
<td>36.2 (±2.7)</td>
</tr>
<tr>
<td>Male gender</td>
<td>48 (84%)</td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>7 (12%)</td>
</tr>
<tr>
<td>Former</td>
<td>5 (9%)</td>
</tr>
<tr>
<td>Current</td>
<td>45 (79%)</td>
</tr>
<tr>
<td>Family History</td>
<td>37 (66%)</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>36 (64%)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>13 (23%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>5 (9%)</td>
</tr>
<tr>
<td>Prior MI</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>TIMI Risk Score (mean +/- SD)</td>
<td>2.1 ± 2</td>
</tr>
</tbody>
</table>
Results - TIMI risk score distribution
Results – STEMI in young patients (< 40 years)

- **Coronary anatomy**:  
  - No stenosis: 8/57 (14%)  
  - 1 vessel with significant stenosis: 41/57 (72%)

- **Therapy**: No-RT 1/57 (2%), TT 32/57 (56%), pPCI 24/57 (42%)

- **Patients experiencing at least one major adverse CV event**: 17/57 (30%)  
  - CV death: 3/57 (5%)  
  - Re-MI: 8/57 (14%)  
  - Re-ischemia: 5/57 (9%)  
  - Hospitalization for CHF: 4/57 (7%)

Follow-up (months ± SD): 62 ± 35
Results – Major adverse CV events after MI

Survival free of death/cardiovascular event after Myocardial Infarction

Proportion surviving event-free

Time to event (years)
## Results – Major adverse CV events by TIMI Score

<table>
<thead>
<tr>
<th>Follow-up (months ± SD)</th>
<th>62 ± 35</th>
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</thead>
<tbody>
<tr>
<td>TIMI Score</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TIMI 0-1 (n=27)</td>
</tr>
<tr>
<td>CV death</td>
<td>0</td>
</tr>
<tr>
<td>Re-MI</td>
<td>1 (4%)</td>
</tr>
<tr>
<td>Re-ischemia</td>
<td>2 (7%)</td>
</tr>
<tr>
<td>Re-hosp CHF</td>
<td>0</td>
</tr>
</tbody>
</table>

**Composite: all patients with major adverse CV events**

- TIMI 0-1 (n=27) - 3 (11%)
- TIMI 2-3 (n=21) - 8 (38%)
- TIMI >3 (n=9) - 6 (66%)

p = 0.004
Results - Major adverse CV events by TIMI Risk Score

Survival free of CV death / CV event after Myocardial Infarction

Log-rank p-value = < 0.003
Conclusions

- Myocardial Infarction in patients < 40 yrs:

  1. **Good prognosis:**
     - Overall survival (5 yrs) : 93%
     - Survival free of CV death (5 yrs) : 95%
     - Survival free of CV event / CV death (5 yrs) : 70%

  2. **Significant correlation between TIMI Score and probability of short- and long-term adverse cardiovascular events**