The early use of N-acetylcysteine (NAC) with Glyceryl Trinitrate (GTN) in STEMI NACIAM Trial: A pilot study

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Disclosures: None
Declaration of Interest

- I have nothing to declare
Background

N-acetylcysteine (NAC)

- ROS Scavenging
- ↓ HOCl, ↓ H₂O₂
- ↓ Oxidative stress
- ↓ Reperfusion injury

Glyceryl trinitrate (GTN)

- NO
- sGC activation
- ↑ cGMP
- Vasodilatation
- ↓ Platelet aggregation
- ↓ Inflammation
- ↑ Tissue reperfusion

Interaction

Potential ↓ Infarct size
**Purpose and key points about methods**

- To assess the efficacy of adding high dose intravenous NAC to low dose intravenous GTN, in acute STEMI patients undergoing PCI

- Randomised, double-blind, placebo-controlled multicentre trial

<table>
<thead>
<tr>
<th></th>
<th>1 hour</th>
<th>47 hours</th>
<th>Early MRI (Day 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAC</td>
<td>20 mg/min</td>
<td>10 mg/min</td>
<td></td>
</tr>
<tr>
<td>GTN</td>
<td>2.5 μg/min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEMI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placebo</td>
<td>40 ml/hr</td>
<td>20 ml/hr</td>
<td></td>
</tr>
<tr>
<td>GTN</td>
<td>2.5 μg/min</td>
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</tr>
</tbody>
</table>

Endpoints:
1. Primary: Myocardial infarct size
2. Secondary: Myocardial salvage
Results

MRI Parameters

<table>
<thead>
<tr>
<th></th>
<th>Placebo (38)</th>
<th>NAC (37)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infarct size (%)</td>
<td>16.5 (10, 24)</td>
<td>11 (4, 16)*</td>
</tr>
<tr>
<td>Area at Risk (%)</td>
<td>23 (18, 31)</td>
<td>25 (17, 37)</td>
</tr>
<tr>
<td>Myocardial Salvage (%)</td>
<td>27 (14, 41)</td>
<td>60 (37, 79)*</td>
</tr>
</tbody>
</table>

* P value <0.05

Effect of Total duration of ischaemia

Treatment (F=9.4, p<0.01),
Time* Treatment (F=4.8, p<0.01)
Conclusions

Addition of intravenous NAC to intravenous GTN:

• Reduces infarct size
• Increases myocardial salvage
• Larger effect with shorter duration of ischaemia