Outcomes in Patients Undergoing Cardiac Catheterization and Therapeutic Hypothermia After Cardiac Arrest

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BACKGROUND
- Early cardiac catheterization and therapeutic hypothermia have shown to improve prognosis of comatose patients after cardiac arrest.
- We assessed outcomes in these patients to hospital discharge and following hospital discharge.

METHODS
- Retrospective study consisted of 173 consecutive patients who met inclusion criteria between 1/2008 and 3/2015.
- Major adverse cardiac events (MACE) were defined as death, non-fatal myocardial infarction, revascularization, and heart failure or arrhythmia-related hospitalization.
- Student t-test, Chi-squared, and step-wise Cox regression analysis were used for analysis.

RESULTS

Table 1: Demographic and presenting characteristics of study population by discharge status.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall (N=173)</th>
<th>Alive at Discharge (n=95)</th>
<th>Deceased at Discharge (n=78)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, Mean ± SD</td>
<td>62.7 ± 12.2</td>
<td>61.6 ± 12.9</td>
<td>64.2 ± 12.6</td>
<td>0.175</td>
</tr>
<tr>
<td>Female (%)</td>
<td>34 (19.7)</td>
<td>16 (16.2)</td>
<td>18 (23.4)</td>
<td>0.181</td>
</tr>
<tr>
<td>Body Mass Index, Median (25th, 75th)</td>
<td>28.0 (24.6, 32.5)</td>
<td>27.8 (24.6, 32.0)</td>
<td>28.5 (24.5, 32.1)</td>
<td>0.269</td>
</tr>
<tr>
<td>Diabetes Mellitus (%)</td>
<td>47 (27.2)</td>
<td>20 (20.2)</td>
<td>27 (36.5)</td>
<td>0.017 **</td>
</tr>
<tr>
<td>CAD/PAD/PRIOR MI (%)</td>
<td>64 (37.0)</td>
<td>30 (31.3)</td>
<td>34 (45.9)</td>
<td>0.035 **</td>
</tr>
<tr>
<td>BNP, Median (25th, 75th)</td>
<td>104.0 (31.0, 308.0)</td>
<td>73.0 (26.0, 203.0)</td>
<td>144.5 (53.5, 395.3)</td>
<td>0.013 **</td>
</tr>
<tr>
<td>Lactate, Median (25th, 75th)</td>
<td>5.1 (2.7, 8.3)</td>
<td>4.5 (2.4, 7.5)</td>
<td>6.5 (3.4, 9.6)</td>
<td>0.005 **</td>
</tr>
<tr>
<td>Venous pH, Median (25th, 75th)</td>
<td>7.17 (7.03, 7.26)</td>
<td>7.22 (7.09, 7.27)</td>
<td>7.09 (6.94, 7.19)</td>
<td>0.002 **</td>
</tr>
<tr>
<td>HgB, Median (25th, 75th)</td>
<td>13.7 (12.6, 15.1)</td>
<td>8.4 (12.8, 15.3)</td>
<td>13.3 (12.0, 14.7)</td>
<td>0.015 **</td>
</tr>
</tbody>
</table>

PRESENTING RHYTHM
- Ventricular tachycardia (%) 6 (3.5) 4 (4.0) 2 (2.7) 0.634
- Ventricular fibrillation (%) 128 (74.0) 86 (86.9) 42 (56.8) < 0.001 **
- Pulsesless electric activity (%) 17 (9.8) 6 (6.1) 11 (14.9) 0.054
- Asystole (%) 22 (12.7) 3 (3.0) 19 (25.7) < 0.001 **
- Bystander administered CPR (%) 85 (49.3) 55 (55.6) 30 (40.5) 0.051

Time to ROSC after initiation of resuscitation (minutes), median (25th, 75th) 22 (12, 40) 18 (10, 26) 35 (19, 52) < 0.001 **
Time to ROSC after collapse (minutes), median (25th, 75th) 30 (18, 49) 25 (13, 35) 44 (25, 59) < 0.001 **

Cumulative MACE free events in patients presenting with arrest who undergo hypothermia protocol

CONCLUSIONS
- In our real world study population, 57.2% of patients were alive to discharge after undergoing catheterization and hypothermia.
- About 40% of the patients who survived to discharge had MACE in an average follow up of 3.4 years.
- These findings highlight the importance of close clinical follow-up for patients who survive cardiac arrest.

REFERENCES
1. JACC 2015; 66:62-73
2. Circ Card Qual Outcomes 2010; 3:63-81
3. Eurointervention 2014; 10:31-7