Early Cardiac Catheterization Improves Survival with Good Neurologic Outcomes in Therapeutic Hypothermia Patients Post-Cardiac Arrest

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**BACKGROUND**

- Therapeutic hypothermia (TH), controlled reduction of body temperature to 32-34°C, has become a standard of post-resuscitative care for cardiac arrest (CA) survivors to reduce brain injury.1
- Early cardiac catheterization (CC) in CA patients is associated with greater odds of survival to discharge and improved neurological outcome.2

**OBJECTIVE**

- This single-center, retrospective analysis intends to determine if early CC is associated with improved survival with good neurologic outcome in CA patients who underwent TH during hospitalization at Lehigh Valley Health Network from 02/2015-10/2016.

**METHODS**

A REDCap database was designed to collect patient information such as demographics, interventional procedures, and neurologic outcome at discharge.

Categorization distinguished those who underwent early cardiac catheterization (Group A, 43) from those who did not (Group B, 56) out of 103 total patients.

Both groups were comparatively analyzed to test for differences in neurologic outcome using Cerebral Performance Category (CPC) scores 1-2.

**PATIENTS AND OUTCOMES**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A: Early cardiac catheterization (n=43)</th>
<th>Group B: No cardiac catheterization (n=56)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in years, mean ± SD (range)</td>
<td>55 ± 20 (14-97)</td>
<td>55 ± 20 (14-97)</td>
<td>0.74</td>
</tr>
<tr>
<td>Male</td>
<td>29/43 (67.4%)</td>
<td>24/56 (42.9%)</td>
<td>0.07</td>
</tr>
<tr>
<td>Female</td>
<td>14/43 (32.6%)</td>
<td>32/56 (57.1%)</td>
<td></td>
</tr>
<tr>
<td>Prior cardiac disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previously healthy</td>
<td>0/43 (0.0%)</td>
<td>10/56 (17.9%)</td>
<td>0.23</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>9/43 (20.9%)</td>
<td>7/56 (12.5%)</td>
<td>0.59</td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td>12/43 (27.9%)</td>
<td>12/56 (21.4%)</td>
<td>0.78</td>
</tr>
<tr>
<td>Diabetes</td>
<td>21/43 (48.8%)</td>
<td>29/56 (51.8%)</td>
<td>0.59</td>
</tr>
<tr>
<td>COPD</td>
<td>4/43 (9.3%)</td>
<td>5/56 (8.9%)</td>
<td></td>
</tr>
<tr>
<td>Renal disease</td>
<td>6/43 (13.9%)</td>
<td>5/56 (8.9%)</td>
<td>0.74</td>
</tr>
<tr>
<td>Diabetes Mellitus (Type I and II)</td>
<td>12/43 (27.9%)</td>
<td>13/56 (23.2%)</td>
<td>0.15</td>
</tr>
<tr>
<td>Hypertension</td>
<td>16/43 (37.2%)</td>
<td>20/56 (35.7%)</td>
<td>0.82</td>
</tr>
</tbody>
</table>

**RESULTS**

- At 95% CI, patients who received early CC had an overall survival rate of 18/42 (42.9%) compared to patients who did not receive CC had an overall survival rate of 13/54 (24.1%) at p=0.032.
- Patients who received early CC had better survival with good neurologic outcome at hospital discharge (38.1%) vs. patients who did not receive CC (18.5%) at p=0.032.
- 88.9% of patients discharged after early CC had good neurologic outcome compared to 76.9% of patients who did not receive CC at p=0.372.

**CONCLUSIONS**

- Early CC in patients admitted with CA who underwent TH is associated with reduced inhospital mortality and better neurological outcome at discharge.
- Although the survivability of cardiac arrests is low, both TH and early CC display promise as treatment measures.
- Future research is needed in relation to TH post-CA to identify 1) which populations would benefit most from CC and 2) how Mechanical Circulatory Support (MCS) devices, such as Impella, ECMO, IABP, affect neurologic outcome.

**REFERENCES**