Neuroprognostication following out of hospital cardiac arrest

R Davidson 1 ; T Bagnall 2 ; M Ahmed 3
1St George’s Hospital Cardiothoracic Intensive Care, Atkinson Morley Wing, London, United Kingdom,
2Kingston Hospital, Cardiology, London, United Kingdom, 3St George’s Hospital Cardiothoracic Intensive Care, London, United Kingdom

Introduction:
Out of hospital cardiac arrest (OHCA) continues to be associated with significant mortality and morbidity. Centralisation of care has considerably improved patient survival but has resulted in increased morbidity in the form of neurological deficit. Accurate neurological prognostication remains challenging incorporating repeated clinical examination and ancillary investigations.

Methods:
Data was collected retrospectively and analysed for 96 patients admitted post OHCA from October 2018 to October 2019. Patient arrest demographics were collected in conjunction with extensive inpatient investigation findings including CT, traditional pupil assessment, pupillometry and EEG.

Results:
50% of patients survived to hospital discharge. Patients presenting in a shockable rhythm continue to have higher survival rates. 53% of patients who received immediate CPR survived to hospital discharge in comparison to 41% of patients who did not receive immediate CPR.
73% of patients underwent non-contrast CT head. 74% of patients had traditional pupillary examination performed on arrival. Pupillometry was introduced in December 2018; 31 out of a possible 85 patients had pupillometry during their inpatient stay. EEG was undertaken in 11% of cases.

Conclusion:
Our data shows receiving immediate CPR and presenting with a shockable rhythm remain positive prognostic factors. CT head as a stand-alone prognostic modality is unreliable with 14% of patients who survived to discharge, with intact neurology, had an admission CT head reported as hypoxic brain injury. A new neuroprognostic strategy is required in our unit that adds further certainty to likely clinical outcome. This includes increased use of tests such as EEG and pupillometry and the introduction of biomarkers such as neuron specific enolase, somatosensory evoked potential testing and magnetic resonance imaging.

References:
Sandroni et al, Critical Care 22:150, 2018
Eertmans et al, Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine 26:93, 2018

Table:

<table>
<thead>
<tr>
<th>Presenting rhythm</th>
<th>Total patients</th>
<th>Survival to discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF/VT</td>
<td>62</td>
<td>65%</td>
</tr>
<tr>
<td>PEA/asystole</td>
<td>33</td>
<td>24%</td>
</tr>
</tbody>
</table>

Survival to discharge based on presenting rhythm