Abstract: P4169
The crucial role of the bystander in out-of-hospital cardiac arrest resuscitation

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On behalf: Research Group on the French national out-of-hospital cardiac arrest registry, RéAC, Lille, France

Topic(s):
Management of Out of Hospital Cardiac Arrest

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Background: Out-of-hospital cardiac arrest (OHCA) is a major public health concern in France, given that there are 61.5 cases per 100,000 inhabitants a year. The impact of bystander action, performed before the arrival of emergency medical services (EMS), on survival has never been studied in France.

Purpose: Determine whether bystander cardiopulmonary resuscitation (CPR), performed before the arrival of EMS, was correlated with an increased 30-day survival rate after an OHCA.

Methods: 24,885 out-of-hospital cardiac arrests witnessed in France from 1 January 2012 to 1 May 2018 were analysed to determine whether CPR, performed before the arrival of EMS, was correlated with survival. Data from the Electronic Registry of Cardiac Arrests was used. The association between the effect of CPR performed before the arrival of EMS and 30-day survival rate was studied, using propensity analysis (which included variables such as age and sex of the patient, location, cause, and year of cardiac arrest, initial cardiac rhythm, EMS response time and no-flow time).

Results: CPR was performed before the arrival of EMS in 14,904 cases (59.9%) and was not performed in 9,981 cases (40.1%). The 30-day survival rate was 10.2% when CRP was performed by bystanders versus 3.9% when CRP was not performed before the EMS arrival (p<0.001). CPR performed by bystanders was associated with an increased 30-day survival rate (odds ratio 1.269; 1.207 to 1.334).

Conclusion: Bystander CPR performed before the arrival of EMS was associated with an increased 30-day survival rate after an out-of-hospital cardiac arrest in France.
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Results: CPR was performed before the arrival of EMS in 14,904 cases (59.9%) and was not performed in 9,981 cases (40.1%). The 30-day survival rate was 10.2% when CPR was performed by bystanders versus 3.9% when CPR was not performed before the EMS arrival (p<0.001). CPR performed by bystanders was associated with an increased 30-day survival rate (odds ratio 1.269; 1.207 to 1.334).

Conclusion: Bystander CPR performed before the arrival of EMS was associated with an increased 30-day survival rate after an out-of-hospital cardiac arrest in France.
The effect of bystander CPR on survival

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Odds Ratio (IC 95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROSC</td>
<td></td>
</tr>
<tr>
<td>Unadjusted Odds Ratio</td>
<td>1.218 (1.194–1.243)</td>
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<tr>
<td>Adjusted Odds Ratio</td>
<td>1.147 (1.112–1.183)</td>
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<tr>
<td>Hospital admission</td>
<td></td>
</tr>
<tr>
<td>Unadjusted Odds Ratio</td>
<td>1.220 (1.196–1.245)</td>
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<tr>
<td>Adjusted Odds Ratio</td>
<td>1.149 (1.114–1.186)</td>
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<tr>
<td>30-day survival</td>
<td></td>
</tr>
<tr>
<td>Unadjusted Odds Ratio</td>
<td>1.367 (1.333–1.402)</td>
</tr>
<tr>
<td>Adjusted Odds Ratio</td>
<td>1.269 (1.207–1.334)</td>
</tr>
<tr>
<td>CPC of 1 or 2</td>
<td></td>
</tr>
<tr>
<td>Unadjusted Odds Ratio</td>
<td>1.156 (1.072–1.247)</td>
</tr>
<tr>
<td>Adjusted Odds Ratio</td>
<td>1.262 (1.087–1.466)</td>
</tr>
</tbody>
</table>

Figure 1: Odds ratio of Survival rates among patients that underwent CPR before the arrival of EMS.

Results were adjusted for a propensity score that included the following variables: age and sex of the patient, location, cause and year of cardiac arrest, initial cardiac rhythm, no-flow time and time from collapse to EMS arrival. Odds ratio are expressed at a 95% confidence interval.

ROSC denotes Return of Spontaneous Circulation. CPC cerebral performance categories.

The effect of bystander CPR on survival