Family presence during cardiopulmonary resuscitation

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Study objectives: Family presence during cardiopulmonary resuscitation (CPR) of a loved one remains controversial. Our study aimed to determine if offering a relative the choice to observe CPR of a family member might reduce his psychological impact 90 days later.

Methods: A multicenter, cluster randomized, controlled trial. We enrolled 570 relatives of patients who were in cardiac arrest in 17 prehospital emergency medical services. Centers were randomized either to 1) systematically offer the family member the opportunity to observe CPR (intervention group) or 2) to the habitual practice regarding family presence (control group). The primary endpoint was the proportion of relatives having post-traumatic stress disorder (PTSD)-related symptoms by an Impact of Event Scale (IES)>30 at 90 days. Secondary endpoints were the presence of anxiety and depression symptoms and impact of family presence on medical efforts at resuscitation, wellbeing of the healthcare team, and on the occurrence of medicolegal claims. Analyses used the Generalized Estimating Equations (GEE).

Results: 211/266 (79%) relatives witnessed CPR (intervention group) compared to 131/304 (43%) relatives (control group). In the intention-to-treat analysis, family members had PTSD-related symptoms significantly more frequently in the control group (adjusted odds ratio, 1.7; 95% confidence interval [CI], 1.2-2.5; P=0.004) and when they did not witness CPR (adjusted odds ratio, 1.7; 95% CI, 1.1-2.5; P=0.02). According to family presence, relatives who did not witness CPR had more frequently symptoms of anxiety and depression. Family-witnessed CPR did not affect resuscitation characteristics, patient survival, medical team stress or result in medicolegal claims.

Conclusions: Our results promote family presence during CPR. This experience was associated with positive results on psychological parameters and neither interfered with medical efforts or health care team stress nor resulted in medicolegal conflicts.

Out-of-hospital cardiac arrest: use of automated external defibrillators and in-hospital death

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Introduction: The availability of automated external defibrillators (AEDs) has spread throughout urban areas, for use by the general population in an effort to improve the outcomes of patients with out-of-hospital cardiac arrest (CA). The efficacy and safety of this approach are not well known. We sought to assess the in-hospital outcomes of patients treated with such AEDs for out-of-hospital CA.

Methods: Between 2004 and 2010, 12,144 consecutive patients with out-of-hospital CA were enrolled in the RENAU-RESURCOR permanent registry, which is being conducted in the French Alps. Since 2008, 190 AEDs have been placed in cities in this region, mainly in public areas. We report in-hospital survival rates in patients treated or not treated with these AEDs.

Results: Data were analysed from 3249 consecutive patients with CA occurring before the arrival of emergency non-medical care services and with cardiopulmonary resuscitation attempted by prehospital emergency medical staff. The cause of CA was cardiac in 2135 patients (572 were in ventricular fibrillation) and non-cardiac in 1114 (eg, drowning, respiratory failure, asphyxia, trauma, haemorrhage, poisoning). Twenty-four patients were treated with AEDs: these patients were younger, more often male and the median time from collapse to electric shock was shorter (Table). Over time the rate of patients treated with an AED increased: 1/1606 (0.1%) in 2008; 8/1688 (0.5%) in 2009; 15/1638 (0.9%) in 2010. In-hospital survival was 25% for patients treated with AED vs 3.4% for those not treated with AED (P<0.001).

Conclusion: The rate of in-hospital survival in patients with out-of-hospital CA could be improved with the use of AEDs available in the community. These preliminary data need to be evaluated and confirmed in larger studies with analysis taking account of confounding factors.

Table. Patient characteristics and in-hospital survival rates according to use or lack of use of out-of-hospital automated external defibrillator (AED)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Treated with AED (n=24)</th>
<th>Not treated with AED (n=3225)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, median (interquartile range), yrs</td>
<td>60 (45-70)</td>
<td>65 (45-70)</td>
</tr>
<tr>
<td>Men, n (%)</td>
<td>16 (67)</td>
<td>2294 (71)</td>
</tr>
<tr>
<td>Time from collapse to shock, median (interquartile range), min</td>
<td>6 (2-12)</td>
<td>14 (10-18)</td>
</tr>
<tr>
<td>Overall survival, n (%)</td>
<td>6 (25)</td>
<td>110 (3.4)</td>
</tr>
<tr>
<td>Survival (cardiac cause of CA), n (%)</td>
<td>6/20 (30)</td>
<td>84/2115 (4.0)</td>
</tr>
<tr>
<td>Survival (non-cardiac cause of CA), n (%)</td>
<td>0/4 (0)</td>
<td>26/1110 (2.3)</td>
</tr>
<tr>
<td>Survival (CA and ventricular fibrillation), n (%)</td>
<td>5/12 (42)</td>
<td>1/560 (0.2)</td>
</tr>
</tbody>
</table>

Prognostic factors in out of hospital cardiac arrest: a new score (DAANS) to guide the optimal management?

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Out-of-hospital cardiac arrest (OHCA) is a complex pathology with a dramatic survival rate despite advances in resuscitation strategies. The aim of our study was to identify predictors of survival in patients (pts) presenting out of hospital cardiac arrest with no early recovery.

Methods: Between Jan 2007 and Aug 2011, data from 113 pts with no obvious extra-cardiac causes, from 187 consecutive patients (pts) victims of OHCA with mechanical ventilation at admission, were collected.

Results: Our population included 71% men, mean aged 58,7±15 years. The median no flow duration was 3 min (0 – 40 min), and the CA to ROSC median delay was 25 min (2-95 min). CPR was immediately initiated in 63 pts (56%).Coronary angiography was performed in 65 pts (57.5%), showing significant lesions in 44 (68%) with successful PCI in 40 (61%). Mild therapeutic hypothermia (MTH) was initiated in 71 pts (63%) with a median time to target

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Recover LP2.5 cardiac assistance and intra aortic balloon pump (IABP) in prospec-"tive study on 7550 admissions. During the initial management of patients victims of OHCA. Retrospectively in this study, a DAANS score >7 was predictor of a 100% mortality.

Conclusion: Pre-hospital classical criterias of poor prognosis after cardiac arrest could be integrated in a simple initial prognostic score (DAANS score) that could help guiding the optimal management (coronarography, MTH, prolonged resuscitation) for victims of OHCA.

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Percutaneous left ventricular assistance in post cardiac arrest shock: comparison of intra aortic blood pump and impella recover LP 2.5

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Objectives: To compare the feasibility, safety and outcome of IMPELLA Recover LP.2.5 cardiac assistance and intra aortic balloon pump (IABP) in patients with post-cardiac arrest shock.

Background: Even after successful resuscitation, the in-hospital survival rate of post-cardiac arrest patients remains very low. Recently, a LV percutaneous mechanical assistance using the IMPELLA Recover LP2.5 has been proposed in order to improve the circulatory abnormalities and to allow further neurological evaluation.

Methods: Retrospective single center registry performed by the interventional cardiology and intensive care departments. All survivors of out-of-hospital cardiac arrest with patent post-resuscitation shock or predictive factors for the occurrence of shock assisted by either IMPELLA or intra aortic balloon pump (IABP) device immediately after the coronary angiogram were included.

Results: 78 post-cardiac arrest patients were assisted (35 by IMPELLA and 43 by IABP). Most of the patients had an acute coronary syndrome as cause of OHCA. Median “no flow” and median “low flow” were similar as hemodynamic parameters at admission. The feasibility (97%) of IMPELLA implantation was very satisfying. At 28 days, the survival rate without sequelae was 23.0% in the IMPELLA group and 29.5% in the IABP group (p=0.61). Vascular complication were observed equally in both groups (3 vs 2, p=0.9). Serious bleeding complications requiring transfusion occurred in 26% of IMPELLA patients vs 9% of IABP patients (p=0.06) and bleeding requiring increase in vasopressor occurred in 9% of patients in both groups.

Conclusion: Emergent LV assistance by the IMPELLA LP 2.5 is feasible in patients with post-resuscitation shock. The rate of complication did not differ substantially in the two groups. These encouraging findings must be confirmed in a larger clinical study.

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Cardiac iatrogenic admissions in a coronary care unit: A prospective study on 7550 admissions

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Introduction: Iatrogenic events were defined as adverse drug reactions or complications induced by non-drug interventions, such as cardiac devices or stimulation techniques. Iatrogenic complications (IC) are associated with prolonged hospitalization and higher in-hospital mortality. In the real world IC are mainly evaluated during hospital stay. The present study focused on admission in a coronary care unit (CCU) for an adverse event and we aimed: a) to evaluate the prevalence and the characteristics of these admissions and the types of iatrogeny; b) and to assess the in-hospital mortality.

Methods: From April 2008 to May 2012, all the consecutive admissions caused IC at the CCU were prospectively studied and classified in 2 groups: 1) pharmacological adverse effect (antiarrhythmics, anticoagulant, and anti-platelets), 2) non pharmacological adverse effect (pace maker, Automatic Implantable Cardioverter Defibrillator, radiofrequency, stent, cardiac surgery).

Results: On 7550 admissions, 302 (4%) IC as admission cause were included in the study. Most patients with IC were male (58%) with a mean age at 71±15 years. The in-hospital mortality of IC group was similar to those in the general population (8% for both). The following table presents the results of the 2 groups (N (%) or mean±SD).

<table>
<thead>
<tr>
<th>N (%)</th>
<th>Men</th>
<th>Age (y)</th>
<th>Hospital death</th>
</tr>
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<tbody>
<tr>
<td>302</td>
<td>178(58%)</td>
<td>71±15</td>
<td>25(8%)</td>
</tr>
<tr>
<td>Non pharmacological adverse effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>161</td>
<td>79(49%)</td>
<td>75±14</td>
<td>13(8.1%)</td>
</tr>
<tr>
<td>Pharmacological adverse effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>141</td>
<td>99(70%)</td>
<td>67±17</td>
<td>12(8.5%)</td>
</tr>
</tbody>
</table>

p <0.001 p<0.001 p=0.891

Conclusion: This preliminary work shows the high frequency of iatrogenic events as a cause of CCU. Work will be necessary to better understand the causes of iatrogeny in order to limit this pathology.

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Diuretic is safe and superior to volume expansion in normotensive patients with acute pulmonary embolism and right ventricular dilatation

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Introduction: The rational and the benefit of load expansion is controver-
sial in acute pulmonary embolism (PE). Diuretic may reduce RV preload and improve hemodynamic status. The present study reported the safety of furose-mide in normotensive acute PE with oligo-anuria.

Methods and Results: We prospectively included 68 consecutive normo-tensive patients (systolic blood pressure ≥90 mmHg) admitted for acute PE with oligoanuria and RV dilatation. RV dilatation was defined by a right and left ventricular diameter ratio >0.6. Overall, 29 patients were treated by a repeated bolus of furosemide (83±84 mg, range 40 to 160 mg), while 39 patients received isotonic saline solution (1.6±0.8 L, range 0.5 to 4.0 L). Patients treated by furosemide and fluid expansion had similar severity of hypoxemia but the furosemide group had lower admission blood pressure (119±21 mmHg vs. 132±18 mmHg, P=0.007) and greater shock index defined as heart rate and blood pressure ratio (0.81±0.23 vs. 0.69±0.18, P=0.02). Despite these differences, only the furosemide group had lower shock index (0.81±0.23 vs. 0.62±0.17, P=0.0001) with improved systolic blood pressure (119±21 mmHg vs. 133±18 mmHg, P=0.001), heart rate (93±19 bpm vs. 81±18 bpm, P=0.001), and creatinin level. Finally, more patients were weaned in oxygen at 24 hours (39% vs. 19%) and in-hospital survival without death and PE-related shock was similar between the two groups (93% vs. 95%).

Conclusions: In normotensive PE with oligoanuria and RV dilatation, diuretic can be safely delivered to improve systolic blood pressure and oxygenation.