

RCP/COMPRESSORS MECÀNICS

1. *Scand J Trauma Resusc Emerg Med.* 2019 Jan 25;27(1):8. doi: 10.1186/s13049-018-0584-0.

Medical dispatchers' perception of visual information in real out-of-hospital cardiac arrest: a qualitative interview study.

Linderoth G^{1,2}, Møller TP³, Folke F³, Lippert FK³, Østergaard D⁴.

NO ABSTRACT

FREE ARTICLE

REGISTRES, REVISIONS I EDITORIALS

1. **Resuscitation.** 2019 Jan 22. pii: S0300-9572(18)30987-0. doi: 10.1016/j.resuscitation.2019.01.014. [Epub ahead of print]

Automated external defibrillator accessibility is crucial for bystander defibrillation and survival: a registry-based study.

Karlsson L¹, Malta Hansen C², Wissenberg M³, Møller Hansen S⁴, Lippert FK⁵, Rajan S⁶, Kragholm K⁷, Møller SG⁶, Bach Søndergaard K⁶, Gislason GH⁸, Torp-Pedersen C⁹, Folke F³.

Abstract

AIMS: Optimization of automated external defibrillator (AED) placement and accessibility are warranted. We examined the associations between AED accessibility, at the time of an out-of-hospital cardiac arrest (OHCA), bystander defibrillation, and 30-day survival, as well as AED coverage according to AED locations.

METHODS: In this registry-based study we identified all OHCA registered by mobile emergency care units in Copenhagen, Denmark (2008-2016). Information regarding registered AEDs (2007-2016) was retrieved from the nationwide Danish AED Network. We calculated AED coverage (AEDs located ≤ 200 m route distance from an OHCA) and, according to AED accessibility, the likelihoods of bystander defibrillation and 30-day survival.

RESULTS: Of 2500 OHCA, 22.6% (n = 566) were covered by a registered AED. At the time of OHCA, <50% of these AEDs were accessible (n = 276). OHCA covered by an accessible AED were nearly three times more likely to receive bystander defibrillation (accessible: 13.8% vs. inaccessible: 4.8%, p < 0.001) and twice as likely to achieve 30-day survival (accessible: 28.8% vs. inaccessible: 16.4%, p < 0.001). Among bystander-witnessed OHCA with shockable heart rhythms (accessible vs. inaccessible AEDs), bystander defibrillation rates were 39.8% vs. 20.3% (p = 0.01) and 30-day survival rates were 72.7% vs. 44.1% (p < 0.001). Most OHCA were covered by AEDs at offices (18.6%), schools (13.3%), and sports facilities (12.9%), each with a coverage loss >50%, due to limited AED accessibility.

CONCLUSIONS: The chance of a bystander defibrillation was tripled, and 30-day survival nearly doubled, when the nearest AED was accessible, compared to inaccessible, at the time of OHCA, underscoring the importance of unhindered AED accessibility.

2. *Medicine* (Baltimore). 2019 Jan;98(4):e13990. doi: 10.1097/MD.000000000013990.

Impact of prehospital mechanical ventilation: A retrospective matched cohort study of 911 calls in the United States.

El Sayed MJ^{1,2}, Tamim H³, Mailhac A¹, Mann NC⁴.

Abstract

Prehospital use of ventilators by emergency medical services (EMS) during 911 calls is increasing. This study described the impact of prehospital mechanical ventilation on prehospital time intervals and on mortality. This retrospective matched-cohort study used 4 consecutive public releases of the US National Emergency Medical Services Information System dataset (2011-2014). EMS activations with recorded ventilator use were randomly matched with activations without ventilator use (1 to 1) on age (range ± 2 years), gender, provider's primary impression, urbanicity, and level of service. A total of 5740 EMS activations were included (2870 patients per group). Patients in the ventilator group had a mean age of 69.1 (± 17.3) years with 49.4% males, similar to the non-ventilator group. Activations were mostly in urban settings (83.8%) with an advanced life support level of care (94.5%). Respiratory distress (77.8%) and cardiac arrest (6.8%) were the most common provider's primary impressions. Continuous positive airway pressure was the most common mode of ventilation used (79.2%). Mortality was higher at hospital discharge (29.0% vs 21.1%, $P = .01$) but not at emergency department (ED) discharge (8.4% vs 7.4%, $P = .19$) with prehospital ventilator use. Both total on-scene time and total prehospital time intervals increased with reported ventilator use (4.10 minutes (95% confidence interval [CI]: 2.71-5.49) and 3.59 minutes (95% CI: 3.04-4.14), respectively). Ventilator use by EMS agencies in 911 calls in the US is associated with higher prehospital time intervals without observed impact on survival to ED discharge. More EMS outcome research is needed to provide evidence-based prehospital care guidelines and targeted resource utilization.

ATURADA INTRA HOSPITALÀRIA

1. Semin Cardiothorac Vasc Anesth. 2019 Jan 25;1089253218825442. doi: 10.1177/1089253218825442. [Epub ahead of print]

Major Cardiac Events in Patients Admitted to Intensive Care After Vascular Noncardiac Surgery: A Retrospective Cohort.

Reis PV^{1,2}, Lopes AI¹, Leite D¹, Moreira J¹, Mendes L¹, Ferraz S¹, Amaral T¹, Mourão J^{1,2}, Abelha F^{1,2}.

Abstract

INTRODUCTION: Patients proposed to vascular noncardiac surgery (VS) have several comorbidities associated with major adverse cardiac events (MACE). We evaluated incidence, predictors, and outcomes, and compared different scores to predict MACE after VS.

METHODS: We included all patients admitted from 2006 to 2013. Perioperative MACE included cardiac arrhythmias, myocardial infarction (MI), cardiogenic pulmonary edema (CPE), acute heart failure (AHF), and cardiac arrest (CA). Lee Revised Cardiac Risk Index (RCRI), Vascular Quality Initiative (VQI-CRI), Vascular Study Group of New England (VSG-CRI), and South African Vascular Surgical (SAVS-CRI) Cardiac Risk Indexes were calculated and analyzed. We performed multivariate logistic regression to assess independent predictors with calculation of odds ratio (OR) and 95% confidence interval (CI). To reduce overfitting, we used leave-one-out cross-validation approach. The Predictive ability of scores was tested using area under receiver operating characteristic curve (AUROC).

RESULTS: A total of 928 patients were included. We observed 81 MACE (28 MI, 22 arrhythmias, 10 CPE, 9 AHF, 12 CA) in 60 patients (6.5%): 3.3% in intermediate-risk surgery and 9.8% in high-risk surgery. Previous history of

coronary artery disease (OR = 3.2, CI = 1.8-5.7), atrial fibrillation (OR = 5.1, CI = 2.4-11.0), insulin-treated diabetes mellitus (OR = 3.26, CI = 1.51-7.06), mechanical ventilation (OR = 2.75, CI = 1.41-4.63), and heart rate (OR = 1.02, CI = 1.01-1.03) at admission were considered independent risk factors in multivariate analysis. The AUROC of our model was 0.79, compared with RCRI (0.66), VSG-CRI (0.69), VQI-CRI (0.71), and SAVS-CRI (0.73).

CONCLUSIONS: Observed MACE were within predicted range (1% to 5% after intermediate-risk surgery and >5% after high-risk surgery). SAVS-CRI and VQI-CRI had slightly better predictive capacity than VSG-CRI or RCRI.

CAUSES DE L'ACR

1. **Mayo Clin Proc.** 2018 Mar;93(3):392-393. doi: 10.1016/j.mayocp.2017.12.021.

In Reply-Serum Calcium and Risk of Sudden Cardiac Arrest in the General Population.

Reinier K1, Uy-Evanado A1, Rusinaru C1, Chugh H1, Chugh SS1, Yarmohammadi H2, Jui J3.

NO ABSTRACT

FÀRMACS

1. **N Engl J Med.** 2019 Jan 24;380(4):397. doi: 10.1056/NEJMc1816187.

Epinephrine in Out-of-Hospital Cardiac Arrest.

Widdicombe N, Reade MC.

NO ABSTRACT

2. **N Engl J Med.** 2019 Jan 24;380(4):397. doi: 10.1056/NEJMc1816187.

Epinephrine in Out-of-Hospital Cardiac Arrest.

Nehme Z, Bernard S, Smith K.

NO ABSTRACT

3. **N Engl J Med.** 2019 Jan 24;380(4):396-7. doi: 10.1056/NEJMc1816187.

Epinephrine in Out-of-Hospital Cardiac Arrest.

Wnent J, Bein B, Fischer M; German Resuscitation Registry Steering.

NO ABSTRACT

4. **N Engl J Med.** 2019 Jan 24;380(4):396. doi: 10.1056/NEJMc1816187.

Epinephrine in Out-of-Hospital Cardiac Arrest.

Mentzelopoulos SD, Zakynthinos SG, Nichol G.

NO ABSTRACT

5. **N Engl J Med.** 2019 Jan 24;380(4):395. doi: 10.1056/NEJMc1816187.

Epinephrine in Out-of-Hospital Cardiac Arrest.

Bray JE, Morley P.

NO ABSTRACT

6. **N Engl J Med.** 2019 Jan 24;380(4):394-5. doi: 10.1056/NEJMc1816187.

Epinephrine in Out-of-Hospital Cardiac Arrest.

Gazmuri RJ, Aiello S.

NO ABSTRACT

CURES POST RCE

1. **BMC Emerg Med.** 2019 Jan 25;19(1):16. doi: 10.1186/s12873-018-0214-1.

Cluster randomised comparison of the effectiveness of 100% oxygen versus titrated oxygen in patients with a sustained return of spontaneous circulation following out of hospital cardiac arrest: a feasibility study. PROXY: post ROSC OXYgenation study.

Thomas M1, Voss S2, Bengner J3,4, Kirby K2, Nolan JP5.

Abstract

BACKGROUND: Hyperoxia following out of hospital cardiac arrest (OHCA) is associated with a poor outcome. Animal data suggest the first hour post resuscitation may be the most important. In the UK the first hour usually occurs in the prehospital environment.

METHODS: A prospective controlled trial, cluster randomised by paramedic, comparing titrated oxygen with 100% oxygen for the first hour after return of spontaneous circulation (ROSC) following OHCA. The trial was done in a single emergency medical services (EMS) system in the United Kingdom (UK) admitting patients to three emergency departments. This was a feasibility trial to determine whether EMS staff (UK paramedics) can be successfully recruited and deliver the intervention.

RESULTS: One hundred and fifty seven paramedics were approached and 46 (29%) were consented, randomised and trained. During the study period 624 patients received a resuscitation attempt. A study paramedic was in attendance at 73 (12%) of these active resuscitations. Thirty-five patients were recruited to the trial, 32 (91%) were transported to hospital and 13 (37%) survived to 90 days. The intervention was initiated in 27/35 (77%) of enrolled patients. A reliable oxygen saturation trace was obtained in 22/35 (69%) of patients. Data collection was complete in 33/35 (94%) of patients.

CONCLUSIONS: It may be feasible to complete a randomised trial of titrated versus unrestricted oxygen in the first hour after ROSC following OHCA in the UK. However, the relatively few eligible patients and incomplete initiation of the allocated intervention are challenges to future research.

TARGETED TEMPERATURE MANAGEMENT

1. *Rev Esp Cardiol (Engl Ed)*. 2018 Sep;71(9):760-762. doi: 10.1016/j.rec.2017.05.017. Epub 2017 Jun 10.

Therapeutic Hypothermia, Propofol, and High Lactate Levels: A Suspicious Combination.

[Article in English, Spanish]

Bañeras J1, Olivero C2, Bosch M3, Lidón RM4, Barrabés J4, García-Dorado D4.

NO ABSTRACT

PEDIATRIA

1. *ASAIO J*. 2019 Jan 14. doi: 10.1097/MAT.0000000000000933. [Epub ahead of print]

Neurologic Outcomes in a Two-Center Cohort of Neonatal and Pediatric Patients Supported on Extracorporeal Membrane Oxygenation.

Bembea MM1,2, Felling RJ3, Caprarola SD4, Ng D5, Tekes A6, Boyle K1, Yiu A1, Rizkalla N1, Schwartz J1, Everett AD2, Salorio AC7,8.

Abstract

Contemporary studies of long-term outcomes in children supported on extracorporeal membrane oxygenation (ECMO) in the United States are limited. We enrolled 99 ECMO patients between July 2010 and June 2015 in a two-center prospective observational study that included neurologic and neuropsychologic evaluation at 6 and 12 months, using standardized outcome measures. Pre-ECMO, 20 (20%) had a pre-existing neurologic diagnosis, 40 (40%) had cardiac arrest, and 10 of 47 (21%) children with neuroimaging had acute abnormal findings. Of 50 children eligible for follow-up at 6 or 12 months, 40 (80%) returned for at least one visit. At the follow-up visit of longest interval from ECMO, the median Vineland Adaptive Behavior Scales-II (VABS-II) score was 91 (interquartile range [IQR], 81-98), the median Pediatric Stroke Outcome Measure (PSOM) score was 1 (IQR, 0-2), and the median Mullen Scales of Early Learning composite score was 85 (IQR, 72-96). Presence of new neuroimaging abnormalities during ECMO or within 6 weeks post-ECMO was associated with VABS-II score <85 or death within 12 months after ECMO. The Pediatric Cerebral Performance Category at hospital discharge showed a strong relationship with unfavorable VABS-II and PSOM scores at 6 or 12 months after ECMO. In this study, we report a higher prevalence of pre-ECMO neurologic conditions than previously described. In survivors to hospital discharge, median scores for adaptive behavior and cognitive, neurologic, and quality of life assessments were all below the general population means, but most deficits would be considered minor within each of the domains tested.

RECERCA EXPERIMENTAL

1. *Am J Emerg Med*. 2019 Jan 17. pii: S0735-6757(19)30027-0. doi: 10.1016/j.ajem.2019.01.027. [Epub ahead of print]

Moderate brain hypothermia started before resuscitation improves survival and neurobehavioral outcomes after CA/CPR in mice.

Jang MS1, Oh SK2, Lee SW3, Jeong SH4, Kim H5.

Abstract

AIM OF THE STUDY: No definitive experimental or clinical evidence exists whether brain hypothermia before, rather than during or after, resuscitation can reduce hypoxic-ischemic brain injury following cardiac arrest/cardiopulmonary resuscitation (CA/CPR) and improve outcomes. We examined the effects of moderate brain hypothermia before resuscitation on survival and histopathological and neurobehavioral outcomes in a mouse model.

METHODS: Adult C57BL/6 male mice (age: 8-12 weeks) were subjected to 8-min CA followed by CPR. The animals were randomly divided into sham, normothermia (NT; brain temperature 37.5 °C), and extracranial hypothermia (HT; brain temperature 28-32 °C) groups. The hippocampal CA1 was assessed 7 day after resuscitation by histochemical staining. Neurobehavioral outcomes were evaluated by the Barnes maze (BMT), openfield (OFT), rotarod, and light/dark (LDT) tests. Cleaved caspase-3 and heat shock protein 60 (HSP70) levels were investigated by western blotting.

RESULTS: The HT group exhibited higher survival and lower CA1 neuronal injury than did the NT group. HT mice showed improved spatial memory in the BMT compared with NT mice. NT mice travelled a shorter distance in the OFT and tended to spend more time in the light compartment in the LDT than did sham and HT mice. The levels of cleaved caspase-3 and HSP70 were non-significantly higher in the NT than in the sham and HT groups.

CONCLUSIONS: Moderate brain hypothermia before resuscitation improved survival and reduced histological neuronal injury, spatial memory impairment, and anxiety-like behaviours after CA/CPR in mice.

2. *Am J Physiol Heart Circ Physiol*. 2019 Jan 25. doi: 10.1152/ajpheart.00673.2018. [Epub ahead of print]

Phosphodiesterase-4 Inhibition Reduces ECLS-Induced Vascular Permeability and Improves Microcirculation in a Rodent Model of Extracorporeal Resuscitation.

Wollborn J1, Siemering S2, Steiger C3, Buerkle H2, Goebel U4, Schick MA2.

Abstract

BACKGROUND: Extracorporeal circulation can be accompanied by increased vascular permeability leading to pathological fluid balance and organ dysfunction. The second messenger cAMP is involved in capillary permeability and maintaining endothelial integrity. The aim of this study is to evaluate the effect of phosphodiesterase-4 (PDE-4) inhibition on ECLS induced capillary leakage, microcirculatory dysfunction and organ injury.

METHODS: Rats were instrumented and randomized into the following groups: Sham, extracorporeal life support (ECLS), ECLS+Rolipram, extracorporeal resuscitation (ECPR) and ECPR+Rolipram. In the groups of ECPR, hypoxic cardiac arrest was induced and extracorporeal cardiopulmonary resuscitation was performed (ECPR). Upon return-of-spontaneous-circulation (ROSC), rolipram was administered intravenously. Mesenteric microcirculation was studied using intravital microscopy and organ specimen were harvested upon completion of the study.

RESULTS: A pro-inflammatory response was present after ECLS and ECPR. While PDE-4 expression was upregulated in vascular tissue PDE-4 inhibition abrogated impaired microcirculation and capillary leak (albumin extravasation for Sham 1±0.03; ECLS 1.2±0.05; ECLS+Rolipram 0.99±0.04; ECPR 1.6±0.04;

ECPR+Rolipram 1.06 ± 0.02 fold of Sham; $p < 0.05$). Leaving serum cytokine levels unchanged, PDE-4 inhibition lead to stabilization of the vascular cAMP level. The systemic markers of capillary leak were reduced. Histological analysis revealed reduced injury in lungs and kidneys, with a significant decrease in the systemic renal damage markers.

CONCLUSIONS: Our findings demonstrate that extracorporeal circulation causes an inflammatory reaction associated with decreased vascular cAMP levels, increased vascular permeability and impaired microcirculation. PDE-4 inhibition proved to be capable of reducing these side-effects in the ECLS and ECPR leading to a reduced microcirculatory dysfunction as well as renal and pulmonary injury.

CASE REPORTS

1. *J Forensic Sci.* 2019 Jan;64(1):298-301. doi: 10.1111/1556-4029.13835. Epub 2018 May 31.

Suture Embolism of the Left Superior Lobar Pulmonary Artery.

Ahn JS¹, Grise J¹, DelTondo JA¹.

Abstract

Endogenous pulmonary thromboemboli are a common cause of noncardiac sudden natural death. Embolism of exogenous material is a rare but potential finding in autopsies following surgeries, medical procedures, penetrating trauma, and nonparenteral drug abuse. This report describes the first case of a suture embolism of the left superior lobar pulmonary artery following complicated abdominal surgery.

FREE ARTICLE