REGISTRES I REVISIONS

1. Circulation. 2016 Apr 5;133(14):1386-96. doi: 10.1161/CIRCULATIONAHA.115.018788. Epub 2016 Feb 26.

Duration of Prehospital Resuscitation Efforts After Out-of-Hospital Cardiac Arrest.

Nagao K1, Nonogi H2, Yonemoto N2, Gaieski DF2, Ito N2, Takayama M2, Shirai S2, Furuya S2, Tani S2, Kimura T2, Saku K2; Japanese Circulation Society With Resuscitation Science Study (JCS-ReSS) Group*.

Abstract

BACKGROUND:

During out-of-hospital cardiac arrest, it is unclear how long prehospital resuscitation efforts should be continued to maximize lives saved.

METHODS AND RESULTS:

Between 2005 and 2012, we enrolled 282 183 adult patients with bystander-witnessed out-of-hospital cardiac arrest from the All-Japan Utstein Registry. Prehospital resuscitation duration was calculated as the time interval from call receipt to return of spontaneous circulation in cases achieving prehospital return of spontaneous circulation or from call receipt to hospital arrival in cases not achieving prehospital return of spontaneous circulation. In each of 4 groups stratified by initial cardiac arrest rhythm (shockable versus nonshockable) and bystander resuscitation (presence versus absence), we calculated minimum prehospital resuscitation duration, defined as the length of resuscitation efforts in minutes required to achieve ≥99% sensitivity for the primary end point, favorable 30-day neurological outcome after out-of-hospital cardiac arrest. Prehospital resuscitation duration to achieve prehospital return of spontaneous circulation ranged from 1 to 60 minutes. Longer prehospital resuscitation duration reduced the likelihood of favorable neurological outcome (adjusted odds ratio, 0.84; 95% confidence interval, 0.838-0.844). Although the frequency of favorable neurological outcome was significantly different among the 4 groups, ranging from 20.0% (shockable/bystander resuscitation group) to 0.9% (nonshockable/bystander resuscitation group; P<0.001), minimum prehospital resuscitation duration did not differ widely among the 4 groups (40 minutes in the shockable/bystander resuscitation group and the shockable/no bystander resuscitation group, 44 minutes in the nonshockable/bystander resuscitation group, and 45 minutes in the nonshockable/no bystander resuscitation group).

CONCLUSIONS:

On the basis of time intervals from the shockable arrest groups, prehospital resuscitation efforts should be continued for at least 40 minutes in all adults with bystander-witnessed out-of-hospital cardiac arrest.

2. Resuscitation. 2016 Aug 23. pii: S0300-9572(16)30404-X. doi: 10.1016/j.resuscitation.2016.08.004. [Epub ahead of print]

What change in outcomes after cardiac arrest is necessary to change practice? Results of an international survey.

Nichol G1, Brown SP1, Perkins GD2, Kim F 1, Sterz F3, Elrod JA1, Mentzelopoulos S4, Lyon R5, Arabi Y6, Castren M7, Larsen P8, Valenzuela T9, Grasner JT10, Youngquist S11, Khunkhlai N12, Wang H13, Ondrej F14, Sastrias JM15, Barasa A16, Sayre M1.

Abstract

BACKGROUND:

Efficient trials of interventions for patients with out-of-hospital cardiac arrest (OHCA) should have adequate but not excess power to detect a difference in outcomes. The minimum clinically important difference (MCID) is the threshold value in outcomes observed in a trial at which providers should choose to adopt a treatment. There has been limited assessment of MCID for outcomes after OHCA. Therefore, we conducted an international survey of individuals interested in cardiac resuscitation to define the MCID for a range of outcomes after OHCA.

METHODS:

A brief survey instrument was developed and modified by consensus. Included were open-ended responses. The survey included an illustrative example of a hypothetical randomized study with distributions of outcomes based on those in a public use datafile from a previous

trial. Elicited information included the minimum significant difference required in an outcome to change clinical practice. The population of interest was emergency physicians or other practitioners of acute cardiovascular research.
RESULTS:
Usable responses were obtained from 160 respondents (50% of surveyed) in 46 countries (79% of surveyed). MCIDs tended to increase as baseline outcomes increased. For a population of patients with 25% survival to discharge and 20% favorable neurologic status at discharge, the MCID were median 5 (interquartile range [IQR] 3, 10) percent for survival to discharge; median 5 (IQR 2, 10) percent for favorable neurologic status at discharge, median 4 (IQR 2, 9) days of ICU-free survival and median 4 (IQR 2, 8) days of hospital-free survival.
CONCLUSION:
Reported MCIDs for outcomes after OHCA vary according to the outcome considered as well as the baseline rate of achieving it. MCIDs of ICU-free survival or hospital-free survival may be useful to accelerate the rate of evidence-based change in resuscitation care.

3. Resuscitation. 2016 Aug 23. pii: S0300-9572(16)30407-5. doi: 10.1016/j.resuscitation.2016.08.007. [Epub ahead of print]
Association between prehospital physician involvement and survival after out-of-hospital cardiac arrest: a Danish nationwide observational study.
Hamilton A1, Steinmetz J2, Wissenberg M3, Torp-Pedersen C4, Lippert FK3, Hove L5, Lohse N6.
Abstract
AIM:
Sudden out-of-hospital cardiac arrest (OHCA) is an important public health problem. While several interventions are known to improve survival, the impact of physician-delivered advanced cardiac life support for OHCA is unclear. We aimed to assess the association between prehospital physician involvement and 30-day survival.
METHODS:
Observational study including persons registered with first-time OHCA of any cause in the Danish Cardiac Arrest Registry during 2005-2012. We used logistic regression analysis to assess the association between 30-day survival and involvement of a physician at any time before arrival at the hospital. Secondary outcomes were 1-year survival and return of spontaneous circulation (ROSC) before arrival at the hospital. The associations were explored in three multivariable models: a model with simple adjustment, a model with multiple imputation of missing variables, and a propensity score model where exposed subjects were matched 1:1 with unexposed subjects on a propensity score reflecting the probability of being assigned to the exposure group.
RESULTS:
21,165 persons with OHCA during 2005-2012 were included. Overall, 10.8% of OHCA patients with physician involvement and 8.1% of OHCA patients without physician involvement before arrival at hospital were alive after 30 days, crude Odds Ratio (OR)=1.37 (95% CI=1.24-1.51), adjusted OR=1.18 (95% CI=1.04-1.34). Physician involvement was also positively associated with ROSC, OR=1.09 (95% CI=1.00-1.19); and with 1-year survival, OR=1.13 (95% CI=0.99-1.29).
CONCLUSION:
In this large population-based observational study, we found prehospital physician involvement after OHCA associated with better 30-day survival. This association was also found for ROSC, but with less certainty for 1-year survival

MARE DE DÉU SENYOR AMB EL METAANÀLISIS!
4. J Clin Anesth. 2016 Sep;33:225-32. doi: 10.1016/j.jclinane.2016.03.001. Epub 2016 May 5.
Therapeutic hypothermia after cardiac arrest is not associated with favorable neurological outcome: a meta-analysis.
Bhattacharjee S1, Baidya DK2, Maitra S3.
Abstract
BACKGROUND:
Cardiac arrest is associated with very high mortality and causes neurological dysfunction in the survivors. Therapeutic hypothermia is one of the recommended modality in the postarrest management. However, recent findings question its benefit in postarrest management. This

meta-analysis has been conceptualized to quantify clinical benefit of therapeutic hypothermia in post-cardiac arrest patients.
METHODS:
Prospective, randomized, and quasi-randomized controlled trials comparing the efficacy of therapeutic hypothermia in post-cardiac arrest adult population with a post-cardiac arrest management protocol that does not include therapeutic hypothermia were included in this meta-analysis. Two authors independently searched PubMed, PubMed Central, Scopus, and Central Register of Clinical Trials of the Cochrane Collaboration for potentially eligible trials.
RESULTS:
Data of 1399 patients from 6 controlled trials have been included in this systematic review and meta-analysis. Therapeutic hypothermia does not provide any benefit in favorable neurological outcome (P=.06; odds ratio, 1.80; 95% confidence interval [CI], 0.97-3.35; n=1384), in survival at hospital discharge (P=.58; odds ratio, 1.16; 95% CI, 0.69-1.96; n=1399), and in long-term survival (P=.36; odds ratio, 1.32; 95% CI, 0.73-2.39; n=1292). Therapeutic hypothermia also increases incidence of pneumonia (P=.02; odds ratio, 1.30; 95% CI, 1.04-1.64; n=1204; number needed to harm, 15).
CONCLUSION:
Therapeutic hypothermia in the post-cardiac arrest management protocol does not provide any benefit in favorable neurological outcome, survival to hospital discharge, and long term survival. Incidence of pneumonia may be increased with the use of therapeutic hypothermia.

DESFIBRIL·LACIÓ

1. Eur Heart J. 2016 Aug 25. pii: ehw353. [Epub ahead of print]
Indications and use of the wearable cardiac defibrillator.
Sharma PS1, Bordachar P2, Ellenbogen KA3.
Abstract
The implantable cardiac defibrillator (ICD) has been an effective tool for prevention of sudden cardiac death (SCD) in populations at high risk for life-threatening sustained ventricular tachycardia (VT) and ventricular fibrillation (VF). However, ICD implantation is dependent on defining ventricular substrate, evaluating the future risk of SCD and estimation of the patient's overall survival. The ability to predict risk of SCD is often difficult. If ventricular dysfunction (a surrogate marker for the risk of SCD) improves, ICD therapy may not be indicated. The wearable cardiac defibrillator (WCD) provides an option for protection during this vulnerable period when the risk of SCD is unclear. It combines an electrocardiogram-monitoring system with an external automatic defibrillator. The WCD can be a safe and effective tool for prevention of VT/VF related SCD events and is used in a variety of clinical situations where the risk of SCD is changing. Such situations include the early phase after acute myocardial infarction with poor left ventricular function (≤35%), after acute coronary revascularization procedures and reduced left ventricular ejection fraction (≤35%), acute heart failure and non-ischemic cardiomyopathy of uncertain duration and prior to medical therapy initiation. The WCD also has a role in patients waiting for heart transplantation or who need a ventricular-assist device and those who have an acute contra-indication to implantation such as active infection. This review discusses the technical aspects of the WCD, its potential clinical application and summarizes the currently available data on the WCD in different populations and future directions.

2. Cardiol Rev. 2016 Aug 18. [Epub ahead of print]
Wearable Cardioverter Defibrillators.
Ferrick AM1, Tian D, Vudathaneni V, Shevchuk OL, Ferrick NJ, Frishman W.
Abstract
The use of implantable cardioverter-defibrillators (ICD) has favorably impacted the prevention and treatment sudden cardiac death (SCD) associated with ventricular arrhythmias. However, there are situations where an ICD cannot be immediately implanted, even though the patient is at high risk for SCD. The wearable cardioverter-defibrillator (WCD) is a unique technology which can bridge this gap for patients. The WCD has been demonstrated to terminate ventricular tachycardia/fibrillation if worn and used correctly. With proper training, it is relatively easy to

put on, maintain, and use. Most patients are compliant and are able to consistently wear the device. The WCD negates the infection risk or procedural complications associated with insertion and possible extraction of leads, as with an ICD. In terms of primary prevention of ventricular tachycardia/fibrillation in patients with left ventricular ejection fraction <35%, prospective, randomized studies evaluating the survival of patients utilizing the WCD will need to be performed before evidenced-based criteria can be established. WCD use for those awaiting heart transplant, those with ICD indications status-post ICD explant, as well as high-risk SCD patients with possible reversible cardiomyopathy appears to be reasonable on the basis of current data.

3. Pediatr Int. 2016 Aug 26. doi: 10.1111/ped.13143. [Epub ahead of print]

Installation of multiple automated external defibrillator to prevent sudden death in school-aged children.

Higaki T1,2, Chisaka T1, Moritani T1,2, Ohta M1, Takata H1, Yamauchi T1, Yamaguchi Y1, Konishi K3, Yamamoto E4, Ochi F1, Eguchi M1, Eguchi-Ishimae M1, Mitani Y5, Ishii E1.

Abstract

BACKGROUND:

Recently, we have experienced a student who died of idiopathic ventricular fibrillation in a school where automated external defibrillator (AED) had been installed. The tragedy could not be prevented because the only AED in the school was installed in teachers' office situated far from the school ground where the accident took place. This occurrence prompted us to establish multiple AED system in schools.

OBJECTIVE:

We analyzed the effect of multiple AED system to prevent the sudden death of school aged children.

METHODS:

Assumed accident site consisted of school ground, gymnasium, Judo and Kendo hall, swimming pool, and classrooms on the first and the fourth floor. Multiple AED has been installed in teachers' office, gymnasium, classroom of different sites, and as a portable AED in a rucksack. The required time was calculated from the accident site to the teachers' office with single AED, and from the accident site to the nearest AED when multiple AED was installed.

RESULTS:

The required time to bring the AED to the accident site was significantly shorter in 55 elementary schools and in 29 junior high schools when multiple AED was installed compared to those with single AED. Except for the classroom on the fourth floor, the number of people concerned who took longer than 120 seconds to bring AED to the accident site was lower when multiple AED was installed than those with single AED.

CONCLUSION:

Multiple AED provided in appropriate sites can reduce the required time to prevent sudden death in school-aged children.

SEMBLA CIÈNCIA FICCIÓ!

4. Sci Rep. 2016 Aug 26;6:32390. doi: 10.1038/srep32390.

Prediction of Ventricular Tachycardia One Hour before Occurrence Using Artificial Neural Networks.

Lee H1, Shin SY2, Seo M3, Nam GB3, Joo S1,4.

Abstract

Ventricular tachycardia (VT) is a potentially fatal tachyarrhythmia, which causes a rapid heartbeat as a result of improper electrical activity of the heart. This is a potentially life-threatening arrhythmia because it can cause low blood pressure and may lead to ventricular fibrillation, asystole, and sudden cardiac death. To prevent VT, we developed an early prediction model that can predict this event one hour before its onset using an artificial neural network (ANN) generated using 14 parameters obtained from heart rate variability (HRV) and respiratory rate variability (RRV) analysis. De-identified raw data from the monitors of patients admitted to the cardiovascular intensive care unit at Asan Medical Center between September 2013 and April 2015 were collected. The dataset consisted of 52 recordings obtained one hour prior to VT events and 52 control recordings. Two-thirds of the extracted parameters were used to train the

ANN, and the remaining third was used to evaluate performance of the learned ANN. The developed VT prediction model proved its performance by achieving a sensitivity of 0.88, specificity of 0.82, and AUC of 0.93.

5. Resuscitation. 2016 Aug 21. pii: S0300-9572(16)30424-5. doi: 10.1016/j.resuscitation.2016.08.008. [Epub ahead of print]

Conversion to shockable rhythms is associated with better outcomes in out-of-hospital cardiac arrest patients with initial asystole but not in those with pulseless electrical activity.

Zheng R1, Luo S2, Liao J1, Liu Z1, Xu J1, Zhan H1, Liao X1, Xiong Y3, Idris A4.

Abstract

BACKGROUND:

The prognostic implication of conversion from initially non-shockable to shockable rhythms in patients with out-of-hospital cardiac arrest (OHCA) remains unclear. Our objective is to determine whether the conversion to shockable rhythms is a reliable predictor of short- and long-term outcomes both in patients who initially presented with pulseless electrical activity (PEA) and in those with asystole.

METHODS:

A secondary analysis was performed on non-traumatic OHCA cases ≥18 years old with PEA or asystole as initial rhythms, who were treated in the field and enrolled in the Resuscitation Outcomes Consortium (ROC) PRIMED study (clinicaltrials.gov/ct2/show/NCT00394706). We reported the characteristics and outcomes for those patients with or without shocks delivered in the field. Logistic regression analysis assessed the association of shock delivery with pre-hospital return of spontaneous circulation (ROSC), survival to hospital discharge and favorable neurological outcome as well.

RESULTS:

Of the 9902 included cases, 3415 (34.5%) were initially in PEA and 6487 (65.5%) were in asystole. 744 (21.8%) PEA and 1134 (17.5%) asystolic patients underwent rhythm conversions and received subsequent shocks. For asystolic patients, the adjusted odds ratios (ORs) of shock delivery for pre-hospital ROSC, survival to discharge and favorable neurological outcome were 1.862 (95%CI 1.590-2.180), 3.778 (95%CI 2.374-6.014) and 4.154 (95%CI 2.192-7.871) respectively, while for PEA patients they were 0.951 (95%CI 0.796-1.137), 1.115 (95%CI 0.720-1.726) and 1.373 (95%CI 0.790-2.385) respectively.

CONCLUSIONS:

Conversion to shockable rhythms was associated with better outcomes in initially asystolic OHCA patients, whereas such associations were not observed in patients initially in PEA

CIRCUMSTÀNCIES ESPECIALS

1. Crit Care Res Pract. 2016;2016:5283765. doi: 10.1155/2016/5283765. Epub 2016 Jul 31.

Management of Maternal Cardiac Arrest in the Third Trimester of Pregnancy: A Simulation-Based Pilot Study.

Adams J1, Cepeda Brito JR2, Baker L1, Hughes PG2, Gothard MD3, McCarroll ML4, Davis J5, Silber A6, Ahmed RA2.

Abstract

Objective. To evaluate confidence, knowledge, and competence after a simulation-based curriculum on maternal cardiac arrest in an Obstetrics & Gynecologic (OBGYN) residency program. Methods. Four simulations with structured debriefing focusing on high yield causes and management of maternal cardiac arrest were executed. Pre- and post-individual knowledge tests (KT) and confidence surveys (CS) were collected along with group scores of critical performance steps evaluated by content experts for the first and final simulations. Results. Significant differences were noted in individual KT scores (pre: 58.9 ± 8.9 versus post: 72.8 ± 6.1, $p = 0.01$) and CS total scores (pre: 22.2 ± 6.4 versus post: 29.9 ± 3.4, $p = 0.007$). Significant differences were noted in airway management, $p = 0.008$; appropriate cycles of drug/shock-CPR, $p = 0.008$; left uterine displacement, $p = 0.008$; and identifying causes of cardiac arrest, $p = 0.008$. Nonsignificant differences were noted for administration of appropriate drugs/doses, $p = 0.074$;

chest compressions, p = 0.074; bag-mask ventilation before intubation, p = 0.074; and return of spontaneous circulation identification, p = 0.074. Groups remained noncompetent in team leader tasks and considering therapeutic hypothermia. Conclusion. This study demonstrated improved OBGYN resident knowledge, confidence, and competence in the management of third trimester maternal cardiac arrest. Several skills, however, will likely require more longitudinal curricular exposure and training to develop and maintain proficiency.

PEDIATRIA

1. Resuscitation. 2016 Aug 23. pii: S0300-9572(16)30402-6. doi: 10.1016/j.resuscitation.2016.07.244. [Epub ahead of print]

Unchanged Pediatric Out-of-Hospital Cardiac Arrest Incidence and Survival Rates with Regional Variation in North America.

Fink EL1, Prince DK2, Kaltman JR3, Atkins DL4, Austin M5, Warden C6, Hutchison J7, Daya M8, Goldberg S9, Herren H2, Tijssen JA10, Christenson J11, Vaillancourt C12, Miller R9, Schmicker RH2, Callaway CW13; Resuscitation Outcomes Consortium.

Abstract

AIM:

Outcomes for pediatric out-of-hospital cardiac arrest (OHCA) are poor. Our objective was to determine temporal trends in incidence and mortality for pediatric OHCA.

METHODS:

Adjusted incidence and hospital mortality rates of pediatric non-traumatic OHCA patients from 2007-2012 were analyzed using the 9 region Resuscitation Outcomes Consortium - Epidemiological Registry (ROC-Epistry) database. Children were divided into 4 age groups: perinatal (< 3 days), infants (3days - 1year), children (1 - 11 years), and adolescents (12 - 19 years). ROC regions were analyzed post-hoc.

RESULTS:

We studied 1,738 children with OHCA. The age- and sex-adjusted incidence rate of OHCA was 8.3 per 100,000 person-years (75.3 for infants vs. 3.7 for children and 6.3 for adolescents, per 100,000 person-years, p<0.001). Incidence rates differed by year (p<0.001) without overall linear trend. Annual survival rates ranged from 6.7-10.2%. Survival was highest in the perinatal (25%) and adolescent (17.3%) groups. Stratified by age group, survival rates over time were unchanged (all p>0.05) but there was a non-significant linear trend (1.3% increase) in infants. In the multivariable logistic regression analysis, infants, unwitnessed event, initial rhythm of asystole, and region were associated with worse survival, all p<0.001. Survival by region ranged from 2.6-14.7%. Regions with the highest survival had more cases of EMS-witnessed OHCA, bystander CPR, and increased EMS-defibrillation (all p<0.05).

CONCLUSIONS:

Overall incidence and survival of children with OHCA in ROC regions did not significantly change over a recent 5year period. Regional variation represents an opportunity for further study to improve outcomes.

2. Emerg Med Australas. 2016 Aug 23. doi: 10.1111/1742-6723.12657. [Epub ahead of print]

Incidence, characteristics and survival outcomes of out-of-hospital cardiac arrest in children and adolescents between 1997 and 2014 in Perth, Western Australia.

Inoue M1, Tohira H1, Williams T1,2, Bailey P2,3, Borland M4,5, McKenzie N1, Brink D2, Finn J1,2,6.

Abstract

OBJECTIVE:

The present study was to describe the trends in the incidence, characteristics and survival of paediatric out-of-hospital cardiac arrest (OHCA) over an 18 year period.

METHODS:

We conducted a population-based retrospective cohort study using prospectively collected data from all OHCA patients aged <18 years who were attended by St John Ambulance Western Australia paramedics in the Perth metropolitan area, WA, between 1997 and 2014. The incidence, characteristics and survival were compared across 4 year periods (1997-2000, 2001-2005, 2006-2010 and 2011-2014). The Paediatric Cerebral Performance Category at hospital

discharge was determined by medical record review. Incidence per 100 000 population was calculated for four age groups (<1, 1-4, 5-12 and 13-17).
RESULTS:
In total, 723 OHCAs were identified, and 451 (62.4%) had resuscitation commenced by paramedics. The patients were predominantly male (61.6%) with a median age of 2 years (IQR 0-14 years). Bystander CPR increased over time from 35.0% (1997-2000) to 63.0% (2011-2014) (P < 0.001). Any return of spontaneous circulation was 39/451 (8.6%), and survival to hospital discharge was 21/451 (5.0%). Of the 20 survivors assessed, 11 had good neurological status at hospital discharge (Paediatric Cerebral Performance Category 1 or 2). The overall incidence decreased from 14.1 (1997-2000) to 8.7 (2011-2014) per 100 000 population (P < 0.001). This was almost halved in children aged <1 year group (P < 0.001).
CONCLUSION:
The incidence of paediatric OHCA decreased over time, but survival remained poor. Strategies to strengthen the chain of survival for paediatric OHCA need to be considered.

POST ACR

1. J Crit Care. 2016 Jul 17;36:218-222. doi: 10.1016/j.jcrc.2016.07.012. [Epub ahead of print]
The association between hemoglobin concentration and neurologic outcome after cardiac arrest.
Johnson NJ1, Rosselot B2, Perman SM3, Dodampahala K4, Goyal M5, Gaieski DF6, Grossestreuer AV7.
Abstract
PURPOSE:
The purpose of the study is to determine the association between hemoglobin concentration (Hgb) and neurologic outcome in postarrest patients.
METHODS:
We conducted a retrospective cohort study using the Penn Alliance for Therapeutic Hypothermia (PATH) cardiac arrest registry. Inclusion criteria were resuscitated cardiac arrest (inhospital or out of hospital) and an Hgb value recorded within 24 hours of return of spontaneous circulation. The primary outcome was favorable neurologic status at hospital discharge. Survival to hospital discharge was a secondary outcome.
RESULTS:
There were 598 eligible patients from 21 hospitals. Patients with favorable neurologic outcome had significantly higher median Hgb in the first 2 hours (12.7 vs 10.5 g/dL; P<.001) and 6 hours (12.6 vs 10.6 g/dL; P<.001) postarrest. Controlling for age, pulseless rhythm, etiology, location of arrest, receipt of targeted temperature management, hematologic or metastatic malignancy, or preexisting renal insufficiency, there was a significant relationship between Hgb and neurologic outcome within the first 6 hours after arrest (odds ratio, 1.23; 95% confidence interval, 1.09-1.38) and survival to hospital discharge (odds ratio, 1.20; 95% confidence interval, 1.08-1.34).
CONCLUSION:
Higher Hgb after cardiac arrest is associated with favorable neurologic outcome, particularly within the first 6 hours. It is unclear if this effect is due to impaired oxygen delivery or if Hgb is a marker for more severe illness

2. Cardiovasc Diabetol. 2016 Aug 24;15(1):118. doi: 10.1186/s12933-016-0445-y.
Associations between blood glucose level and outcomes of adult in-hospital cardiac arrest: a retrospective cohort study.
Wang CH1,2, Huang CH1, Chang WT1, Tsai MS1, Yu PH3, Wu YW4,5,6, Chen WJ7,8.
Abstract
BACKGROUND:
We intended to analyse the associations between blood glucose (BG) level and clinical outcomes of in-hospital cardiac arrest (IHCA).
METHODS:
We conducted a retrospective observational study in a single medical centre and evaluated patients who experienced IHCA between 2006 and 2014. We used multivariable logistic

regression analysis to study associations between independent variables and outcomes. We calculated the mean BG level for each patient by averaging the maximum and minimum BG levels in the first 24 h after arrest, and we used mean BG level for our final analysis.
RESULTS:
We included a total of 402 patients. Of these, 157 patients (39.1 %) had diabetes mellitus (DM). The average mean BG level was 209.9 mg/dL (11.7 mmol/L). For DM patients, a mean BG level between 183 and 307 mg/dL (10.2-17.1 mmol/L) was significantly associated with favourable neurological outcome (odds ratio [OR] 2.71, 95 % confidence interval [CI] 1.18-6.20; p value = 0.02); a mean BG level between 147 and 317 mg/dL (8.2-17.6 mmol/L) was significantly associated with survival to hospital discharge (OR 2.38, 95 % CI 1.26-4.53; p value = 0.008). For non-DM patients, a mean BG level between 143 and 268 mg/dL (7.9-14.9 mmol/L) was significantly associated with survival to hospital discharge (OR 2.93, 95 % CI 1.62-5.40; p value < 0.001).
CONCLUSIONS:
Mean BG level in the first 24 h after cardiac arrest was associated with neurological outcome for IHCA patients with DM. For neurological and survival outcomes, the optimal BG range may be higher for patients with DM than for patients without DM.

CECOS

1. Resuscitation. 2016 Aug 22. pii: S0300-9572(16)30426-9. doi: 10.1016/j.resuscitation.2016.08.010. [Epub ahead of print]

Augmented survival of out-of-hospital cardiac arrest victims with the use of mobile phones for emergency communication under the DA-CPR protocol getting information from callers beside the victim.

Maeda T1, Yamashita A2, Myojo Y3, Wato Y4, Inaba H5.

Abstract
PURPOSE:
To investigate the impacts of emergency calls made using mobile phones on the quality of dispatcher-assisted cardiopulmonary resuscitation (DA-CPR) and survival from out-of-hospital cardiac arrests (OHCAs) that were not witnessed by emergency medical service (EMS).
METHODS:
In this prospective study, we collected data for 2530 DA-CPR-attempted medical emergency cases (517 using mobile phones and 2013 using landline phones) and 2980 non-EMS-witnessed OHCAs (600 using mobile phones and 2380 using landline phones). Time factors and quality of DA-CPR, backgrounds of callers and outcomes of OHCAs were compared between mobile and landline phone groups.
RESULTS:
Emergency calls are much more frequently placed beside the arrest victim in mobile phone group (52.7% vs. 17.2%). The positive predictive value and acceptance rate of DA-CPR in mobile phone group (84.7% and 80.6%, respectively) were significantly higher than those in landline group (79.2% and 70.9%). The proportion of good-quality bystander CPR in mobile phone group was significantly higher than that in landline group (53.5% vs. 45.0%). When analysed for all non-EMS-witnessed OHCAs, rates of 1-month survival and 1-year neurologically favourable survival in mobile phone group (7.8% and 3.5%, respectively) were higher than those in landline phone group (4.6% and 1.9%; $p<0.05$). Multiple logistic regression analysis, including other backgrounds, revealed that mobile phone calls were associated with increased 1-month survival in the subgroup of OHCAs receiving bystander CPR (adjusted odds ratio, 1.84; 95% CI, 1.15-2.92).
CONCLUSION:
Emergency calls made using mobile phones are likely to augment the survival from OHCAs by improving DA-CPR.

TARGET TEMEPEARTURE MANAGEMENT

1. Resuscitation. 2016 Aug 23. pii: S0300-9572(16)30427-0. doi: 10.1016/j.resuscitation.2016.08.011. [Epub ahead of print]

A low body temperature on arrival at hospital following out-of-hospital-cardiac-arrest is associated with increased mortality in the TTM-study.

Hovdenes J1, Røysland K2, Nielsen N3, Kjaergaard J4, Wanscher M4, Hassager C4, Wetterslev J5, Cronberg T6, Erlinge D7, Friberg H8, Gasche Y9, Horn J10, Kuiper M11, Pellis T12, Stammet P13, Wise MP14, Åneman A15, Bugge JF16.

Abstract

AIM:

To investigate the association of temperature on arrival to hospital after out-of-hospital-cardiac arrest (OHCA) with the primary outcome of mortality, in the targeted temperature management (TTM) trial.

METHODS:

The TTM trial randomized 939 patients to TTM at 33 or 36°C for 24h. Patients were categorized according to their recorded body temperature on arrival and also categorized to groups of patients being actively cooled or passively rewarmed.

RESULTS:

OHCA patients having a temperature ≤34.0°C on arrival at hospital had a significantly higher mortality compared to the OHCA patients with a higher temperature on arrival. A low body temperature on arrival was associated with a longer time to return of spontaneous circulation (ROSC) and duration of transport time to hospital. Patients who were actively cooled or passively rewarmed during the first 4h had similar mortality. In a multivariate logistic regression model mortality was significantly related to time from OHCA to ROSC, time from OHCA to advanced life support (ALS), age, sex and first registered rhythm. None of the temperature related variables (included the TTM-groups) were significantly related to mortality.

CONCLUSION:

OHCA patients with a temperature ≤34.0°C on arrival have a higher mortality than patients with a temperature ≥34.1°C on arrival. A low temperature on arrival is associated with a long time to ROSC. Temperature changes and TTM-groups were not associated with mortality in a regression model.

2. Circulation. 2016 Aug 25. pii: CIRCULATIONAHA.116.021989. [Epub ahead of print]

Induction of Therapeutic Hypothermia During Out-of-Hospital Cardiac Arrest Using a Rapid Infusion of Cold Saline (The RINSE Trial).

Bernard SA1, Smith K2, Finn J3, Hein C4, Grantham H4, Bray JE5, Deasy C6, Stephenson M2, Williams TA7, Straney LD8, Brink D9, Larsen R10, Cotton C10, Cameron P8.

Abstract

BACKGROUND:

-Patients successfully resuscitated by paramedics from out-of-hospital cardiac arrest (OHCA) often suffer severe neurological injury. Laboratory and observational clinical reports have suggested that induction of therapeutic hypothermia during cardiopulmonary resuscitation (CPR) may improve neurological outcomes. One technique for induction of mild therapeutic hypothermia during CPR is a rapid infusion of large-volume cold crystalloid fluid.

METHODS:

-In this multi-centre, randomized, controlled trial we assigned adults with OHCA undergoing CPR to either a rapid intravenous infusion of up to two-litres cold saline or standard care. The primary outcome measure was survival at hospital discharge; secondary end-points included return of a spontaneous circulation (ROSC). The trial was closed early (at 48% recruitment target) due to changes in temperature management at major receiving hospitals.

RESULTS:

-A total of 1198 patients were assigned to either therapeutic hypothermia during CPR (618 patients) or standard pre-hospital care (580 patients). Patients allocated to therapeutic hypothermia received a mean (SD) of 1193 (647) mL cold saline. For patients with an initial shockable cardiac rhythm, there was a decrease in the rate of ROSC in patients who received cold saline compared with standard care (41.2% compared with 50.6%, P=0.03). Overall 10.2% of patients allocated to therapeutic hypothermia during CPR were alive at hospital discharge compared with 11.4% who received standard care (P=0.71).

CONCLUSIONS:

In adults with OHCA, induction of mild therapeutic hypothermia using a rapid infusion of large-volume, intravenous cold saline during CPR may decrease the rate of ROSC in patients with an initial shockable rhythm and produced no trend towards improved outcomes at hospital discharge.

3. Medicine (Baltimore). 2016 Aug;95(34):e4692. doi: 10.1097/MD.0000000000004692.
Safety and feasibility of the RhinoChill immediate transnasal evaporative cooling device during out-of-hospital cardiopulmonary resuscitation: A single-center, observational study.
Grave MS1, Sterz F, Nürnberger A, Fykatas S, Gatterbauer M, Stättermayer AF, Zajicek A, Malzer R, Sebald D, van Tulder R.
Abstract
We investigated feasibility and safety of the RhinoChill (RC) transnasal cooling system initiated before achieving a protected airway during cardiopulmonary resuscitation (CPR) in a prehospital setting.In out-of-hospital cardiac arrest (OHCA), transnasal evaporative cooling was initiated during CPR, before a protected airway was established and continued until either the patient was declared dead, standard institutional systemic cooling methods were implemented or cooling supply was empty. Patients were monitored throughout the hypothermia period until either death or hospital discharge. Clinical assessments and relevant adverse events (AEs) were documented over this period of time.In total 21 patients were included. Four were excluded due to user errors or meeting exclusion criteria. Finally, 17 patients (f=6; mean age 65.5 years, CI95%: 57.7-73.4) were analyzed. Device-related AEs, like epistaxis or nose whitening, occurred in 2 patients. They were mild and had no consequence on the patient's outcome. According to the field reports of the emergency medical services (EMS) personnel, no severe technical problems occurred by using the RC device that led to a delay or the impairment of quality of the CPR. Early application of the RC device, during OHCA is feasible, safe, easy to handle, and does not delay or hinder CPR, or establishment of a secure intubation. For efficacy and further safety data additional studies will be needed.

4. Am J Cardiol. 2016 Jul 29. pii: S0002-9149(16)31243-7. doi: 10.1016/j.amjcard.2016.07.034. [Epub ahead of print]
Prevalence and Prognostic Implications of Bundle Branch Block in Comatose Survivors of Out-of-Hospital Cardiac Arrest.
Grand J1, Thomsen JH2, Kjaergaard J1, Nielsen N3, Erlinge D4, Wiberg S1, Wanscher M5, Bro-Jeppesen J1, Hassager C1.
Abstract
This study reports the prevalence and prognostic impact of right bundle branch block (RBBB) and left bundle branch block (LBBB) in the admission electrocardiogram (ECG) of comatose survivors of out-of-hospital cardiac arrest (OHCA). The present study is part of the predefined electrocardiographic substudy of the prospective randomized target temperature management trial, which found no benefit of targeting 33°C over 36°C in terms of outcome. Six-hundred eighty-two patients were included in the substudy. An admission ECG, which defined the present study population, was available in 602 patients (88%). These ECGs were stratified by the presence of LBBB, RBBB, or no-BBB (reference) on admission. End points were mortality and neurologic outcome 6 months after OHCA. RBBB was present in 79 patients (13%) and LBBB in 65 patients (11%), and the majority of BBBs (92%) had resolved 4 hours after admission. RBBB was associated with significantly higher 6 months mortality (RBBB: hazard ratio [HR]unadjusted 1.78, 95% confidence interval [CI] 1.30 to 2.43; LBBB: HRunadjusted 1.26, 95% CI 0.87 to 1.81), but this did not reach a level of significance in the adjusted model (HRadjusted 1.33, 95% CI 0.94 to 1.87). Similar findings were seen for neurologic outcome in the unadjusted and adjusted analyses. RBBB was further independently associated with higher odds of unfavorable neurologic outcome (RBBB: adjusted odds ratio 1.97, 95% CI 1.05 to 3.71). In conclusion, BBBs after OHCA were transient in most patients, and RBBB was directly associated with higher mortality and independently associated with higher odds of unfavorable neurologic outcome. RBBB is seemingly an early indicator of an unfavorable prognosis after OHCA.

RECERCA EXPERIMENTAL

1. J Surg Res. 2016 Apr;201(2):327-33. doi: 10.1016/j.jss.2015.11.015. Epub 2015 Dec 1.
Effects of intraosseous epinephrine in a cardiac arrest swine model.
Wong MR1, Reggio MJ1, Morocho FR1, Holloway MM1, Garcia-Blanco JC2, Jenkins C1, Johnson AD3.

Abstract
BACKGROUND:
Interruptions in cardiopulmonary resuscitation (CPR) to obtain vascular access reduces blood flow to vital organs. Tibial intraosseous (TIO) access may be a faster alternative to intravenous (IV) access for delivery of vasoactive medications. The purpose of this study was to examine the differences in pharmacokinetics and pharmacodynamics of TIO- and IV-delivered epinephrine.
MATERIALS AND METHODS:
A prospective, between subjects, experimental design comparing Cmax, Tmax, return of spontaneous circulation (ROSC), and time to ROSC. Adult male swine were divided into three equal groups (n = 7) all received CPR and defibrillation: the second group received IV epinephrine and the third group received tibial intraosseous epinephrine. Swine were placed in cardiac arrest for 2 min before CPR was initiated. After 2 min of CPR, epinephrine was delivered by IV or TIO, and serial blood samples were collected over 4 min.
RESULTS:
There were no significant differences between IV versus TIO epinephrine in achieving ROSC, time to ROSC, and Cmax. A one-way analysis of variance demonstrated a significant difference between the IV and TIO groups in Tmax (P = 0.025). A Fisher exact test demonstrated a significant difference between IV epinephrine versus CPR/Defib only (P = 0.035) and TIO epinephrine versus CPR/Defib only (P = 0.010) in achieving ROSC. A multivariate analysis of variance showed significant differences in IV versus intraosseous epinephrine concentration at specific time intervals: 60 (P = 0.023), 90 (P = 0.001), and 120 (P < 0.000) sec.
CONCLUSIONS:
In the context of ROSC, epinephrine delivered via TIO route is a clinically relevant alternative to IV administration. When IV access cannot be immediately obtained in cardiac arrest patients, TIO access should be considered

REGISTRES I REVISIONS

Canvieu-vos a viure en uns baixos…

1. CMAJ. 2016 Apr 5;188(6):413-9. doi: 10.1503/cmaj.150544. Epub 2016 Jan 18.
Out-of-hospital cardiac arrest in high-rise buildings: delays to patient care and effect on survival.
Drennan IR1, Strum RP2, Byers A2, Buick JE2, Lin S2, Cheskes S2, Hu S2, Morrison LJ2; Rescu Investigators.
Comment in: High-rise residential resuscitation: scaling the challenge. [CMAJ. 2016]

Abstract
BACKGROUND:
The increasing number of people living in high-rise buildings presents unique challenges to care and may cause delays for 911-initiated first responders (including paramedics and fire department personnel) responding to calls for out-of-hospital cardiac arrest. We examined the relation between floor of patient contact and survival after cardiac arrest in residential buildings.
METHODS:
We conducted a retrospective observational study using data from the Toronto Regional RescuNet Epistry database for the period January 2007 to December 2012. We included all adult patients (≥ 18 yr) with out-of-hospital cardiac arrest of no obvious cause who were treated in private residences. We excluded cardiac arrests witnessed by 911-initiated first responders and those with an obvious cause. We used multivariable logistic regression to determine the effect on survival of the floor of patient contact, with adjustment for standard Utstein variables.
RESULTS:
During the study period, 7842 cases of out-of-hospital cardiac arrest met the inclusion criteria, of which 5998 (76.5%) occurred below the third floor and 1844 (23.5%) occurred on the third

floor or higher. Survival was greater on the lower floors (4.2% v. 2.6%, p = 0.002). Lower adjusted survival to hospital discharge was independently associated with higher floor of patient contact, older age, male sex and longer 911 response time. In an analysis by floor, survival was 0.9% above floor 16 (i.e., below the 1% threshold for futility), and there were no survivors above the 25th floor.
INTERPRETATION:
In high-rise buildings, the survival rate after out-of-hospital cardiac arrest was lower for patients residing on higher floors. Interventions aimed at shortening response times to treatment of cardiac arrest in high-rise buildings may increase survival.

2. Int J Cardiol. 2016 Aug 14;223:883-890. doi: 10.1016/j.ijcard.2016.08.226. [Epub ahead of print]
In an era of rapid STEMI reperfusion with Primary Percutaneous Coronary Intervention is there a role for adjunct therapeutic hypothermia? A structured literature review.
Saunderson CE1, Chowdhary A2, Brogan RA3, Batin PD4, Gale CP5.
Abstract
Mild hypothermia has been shown to improve neurological outcome and reduce mortality following out of hospital cardiac arrest. In animal models the application of hypothermia with induced coronary occlusion has demonstrated a reduction in infarct size. Consequently, hypothermia has been proposed as a treatment, in addition to Primary Percutaneous Coronary Intervention (PPCI) for ST segment elevation myocardial infarction (STEMI). However, there is incomplete understanding of the mechanism and magnitude of the protective effect of hypothermia on the myocardium, and limited outcome data. We undertook a structured literature review of therapeutic hypothermia as adjuvant to PPCI for acute STEMI. We examined the feasibility, safety, impact on infarct size and the resultant effect on major adverse cardiac events and mortality. There were 13 studies between 1946 and 2016. With the exception of one study, therapeutic hypothermia for STEMI was reported to be feasible and safe, and its only demonstrable benefit was a modest reduction in post-infarct heart failure events. Evidence to date, however, is from small clinical trials and in an era of low early mortality following PPCI for STEMI, demonstrating a mortality benefit will be challenging. Post-myocardial infarction left ventricular dysfunction is a more frequent, alternative clinical outcome and therefore any intervention that mitigates this warrants further investigation.

DISPOSITIUS DE FEEDBACK

1. Am J Emerg Med. 2016 May;34(5):899-902. doi: 10.1016/j.ajem.2016.02.052. Epub 2016 Feb 26.
A flexible pressure sensor could correctly measure the depth of chest compression on a mattress.
Minami K1, Kokubo Y2, Maeda I2, Hibino S2.
Abstract
BACKGROUND: Feedback devices are used to improve the quality of chest compression (CC). However, reports have noted that accelerometers substantially overestimate depth when cardiopulmonary resuscitation (CPR) is performed on a soft surface. Here, we determined whether a flexible pressure sensor could correctly evaluate the depth CC performed on a mannequin placed on a mattress.
METHODS: Chest compression was performed 100 times/min by a compression machine on the floor or a mattress, and the depth of CC was monitored using a flexible pressure sensor (Shinnosukekun) and CPRmeter(™). The depth of machine-performed CC was consistently 5 cm. We compared data from the feedback sensor with the true depth of CC using dual real-time auto feedback system that incorporated an infrared camera (CPR evolution(™)).
RESULTS: On the floor, the true depth of CC was 5.0±0.0cm (n=100), or identical to the depth of CC performed by the machine. The Shinnosukekun(™) measured a mean (±SD) CC depth of 5.0±0.1cm (n=100), and the CPRmeter(™) measured a depth of 5.0±0.2cm (n=100). On the mattress, the true depth of CC was 4.4±0.0cm (n=100). The Shinnosukekun(™) measured a mean CC depth of 4.4±0.0cm (n=100), and the CPRmeter(™) measured a depth of 4.7±0.1cm (n=100).

The data of CPRmeter(™) were overestimated (P<.0001 between the true depth and the CPRmeter(™)-measured depth).
CONCLUSION: The Shinnosukekun(™) could correctly measure the depth of CC on a mattress. According to our present results, the flexible pressure sensor could be a useful feedback system for CC performed on a soft surface.

DESFIBRIL·LACIÓ

1. Curr Opin Crit Care. 2016 Oct;22(5):416-23. doi: 10.1097/MCC.0000000000000346.
Protocolized care for early shock resuscitation.
Goodwin M1, Ito K, Gupta AH, Rivers EP.
Author information:
• 1aDepartment of Surgeryb Department of Emergency Medicine, Henry Ford Hospital, Wayne State University, Detroit, Michigan, USA.
Abstract
PURPOSE OF REVIEW: Protocolized care for early shock resuscitation (PCESR) has been intensely examined over the last decade. The purpose is to review the pathophysiologic basis, historical origin, clinical applications, components and outcome implications of PCESR.
RECENT FINDINGS: PCESR is a multifaceted systems-based approach that includes early detection of high-risk patients and interventions to rapidly reverse hemodynamic perturbations that result in global or regional tissue hypoxia. It has been applied to perioperative surgery, trauma, cardiology (heart failure and acute myocardial infarction), pulmonary embolus, cardiac arrest, undifferentiated shock, postoperative cardiac surgery and pediatric septic shock. When this approach is used for adult septic shock, in particular, it is associated with a mortality reduction from 46.5 to less than 30% over the last 2 decades. Challenges to these findings are seen when repeated trials contain enrollment, diagnostic and therapeutic methodological differences.
SUMMARY: PCESR is more than a hemodynamic optimization procedure. It also provides an educational framework for the less experienced and objective recognition of clinical improvement or deterioration. It further minimizes practices' variation and provides objective measures that can be audited, evaluated and amendable to continuous quality improvement. As a result, morbidity and mortality are improved.

MONITORATGE

1. BMC Res Notes. 2016 Aug 31;9(1):428. doi: 10.1186/s13104-016-2239-4.
Pre-hospital portable monitoring of cerebral regional oxygen saturation (rSO2) in seven patients with out-of-hospital cardiac arrest.
Hirose T1, Shiozaki T2, Nomura J3, Hamada Y3, Sato K3, Katsura K3, Ehara N4, Wakai A4, Shimizu K2, Ohnishi M2, Hayashida S5, Sadamitsu D4, Shimazu T2.
Abstract
BACKGROUND: In recent years, measurement of cerebral regional oxygen saturation (rSO2) has attracted attention during resuscitation. However, serial changes of cerebral rSO2 in pre-hospital settings are unclear. The objective of this study was to clarify serial changes in cerebral rSO2 of patients with out-of-hospital cardiac arrest (OHCA) in the pre-hospital setting.
METHODS: We recently developed a portable rSO2 monitor that is small (170 × 100 × 50 mm in size and 600 g in weight) enough to carry in pre-hospital settings. The sensor is attached to the patient's forehead by the ELT (Emergency Life-saving Technician), and it monitors rSO2 continuously.
RESULTS: From June 2013 through August 2014, serial changes in cerebral rSO2 in seven patients were evaluated. According to the results of the serial changes in rSO2, four patterns of rSO2 change were found, as follows. Type 1: High rSO2 (around about 60 %) type (n = 1). Initial electrocardiogram was ventricular fibrillation and ROSC (return of spontaneous circulation) could be diagnosed in pre-hospital setting. Her outcome at discharge was Good Recovery (GR). Type 2: Low rSO2 (around about 45-50 %) type (n = 3). They did not get ROSC even once. Type 3: Gradually decreasing rSO2 type (n = 2): ROSC could be diagnosed in hospital, but not in pre-

hospital setting. Their outcomes at discharge were not GR. Type 4: other type (n = 1). In this patient with ROSC when ELT started cerebral rSO2 measurement, cerebral rSO2 was 67.3 % at measurement start, it dropped gradually to 54.5 %, and then rose to 74.3 %. The cerebral oxygenation was impaired due to possible cardiac arrest again, and after that, ROSC led to the recovery of cerebral blood flow.
CONCLUSION: We could measure serial changes in cerebral rSO2 in seven patients with OHCA in the pre-hospital setting. Our data suggest that pre-hospital monitoring of cerebral rSO2 might lead to a new resuscitation strategy.

2. J Pediatr Surg. 2016 Jan;51(1):38-43. doi: 10.1016/j.jpedsurg.2015.10.017. Epub 2015 Oct 23.
A novel multimodal computational system using near-infrared spectroscopy to monitor cerebral oxygenation during assisted ventilation in CDH patients.
Cruz SM1, Akinkuotu AC1, Rusin CG2, Cass DL3, Lee TC1, Welty SE4, Olutoye OO5.
Abstract
BACKGROUND/PURPOSE: The aim of this study was to create a computational simulator to serve as an early alert system for cerebral hypoxemia prior to the onset of clinical symptoms.
METHODS: Neonates with congenital diaphragmatic hernia (Jan 2010-Dec 2014) were recruited to collect continuous measurements of cerebral tissue oxygen saturation (cStO2) using a near-infrared spectroscopy (NIRS) device (FORE-SIGHT®, CASMED). Clinicians were blinded to NIRS data and treated infants based on pre-established clinical protocols. Charts were reviewed retrospectively to identify clinical events of hypoxemia (spontaneous, sustained decrease in preductal SpO2<85% leading to ventilator changes). We developed a computational algorithm that determined baseline values, variability and event data for each patient.
RESULTS: Twenty-three of 36 patients enrolled met data criteria. The algorithm anticipated an event at least 15 minutes prior to the event in 77% of cases, with an average pre-event detection of 47 minutes (range 16-122 minutes). Post-event StO2 (SpO2<85%) was determined to be 63.7% ± 11.7. In this computational model, the sensitivity to distinguish low states of cerebral perfusion was 94% with a specificity of 96%.
CONCLUSION: We have developed a computational algorithm with an early warning system that has the potential of being translated into a real-time clinical interface that may improve management of neonates.

PEDIATRIA

1. Arch Dis Child Fetal Neonatal Ed. 2016 May;101(3):F272-6. doi: 10.1136/archdischild-2015-309761. Epub 2015 Dec 1.
A review of approaches to optimise chest compressions in the resuscitation of asphyxiated newborns.
Solevåg AL1, Cheung PY2, O'Reilly M2, Schmölzer GM2.
Abstract
OBJECTIVE: Provision of chest compressions (CCs) and/or medications in the delivery room is associated with poor outcomes. Based on the physiology of perinatal asphyxia, we aimed to provide an overview of current recommendations and explore potential determinants of effective neonatal cardiopulmonary resuscitation (CPR): balancing ventilations and CC, CC rate, depth, full chest recoil, CC technique and adrenaline.
DESIGN: A search in the databases MEDLINE (Ovid) and EMBASE until 10 April 2015.
SETTING: Delivery room.
PATIENTS: Asphyxiated newborn infants.
INTERVENTIONS: CCs.
MAIN OUTCOME MEASURES: Haemodynamics, recovery and survival.
RESULTS: Current evidence is derived from mathematical models, manikin and animal studies, and small case series. No randomised clinical trials examining neonatal CC have been performed. There is no evidence to refute a CC to ventilation (C:V) ratio of 3:1. Raising the intrathoracic pressure, for example, by superimposing a sustained inflation on uninterrupted CC, and a CC rate >120/min may be beneficial. The optimal neonatal CC depth is unknown, but factors influencing depth and consistency include the C:V ratio. Incomplete chest wall recoil can cause less negative intrathoracic pressure between CC and reduced CPR effectiveness. CC should be

performed with the two-thumb method over the lower third of the sternum. The optimal dose, route and timing of adrenaline administration remain to be determined.
CONCLUSIONS: Successful CPR requires the delivery of high-quality CC, encompassing optimal (A) C:V ratio (B) rate, (C) depth, (D) chest recoil between CC, (E) technique and (F) adrenaline dosage. More animal studies with high translational value and randomised clinical trials are needed.

2. Arch Dis Child Fetal Neonatal Ed. 2016 May;101(3):F244-7. doi: 10.1136/archdischild-2015-309206. Epub 2015 Sep 23.

Resuscitative interventions during simulated asystole deviate from the recommended timeline.

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Abstract

OBJECTIVES: Determine how consistently providers follow neonatal resuscitation programme (NRP) guidelines in the management of asystolic infants requiring intensive resuscitation in a simulated environment and determine time to first administration of intravenous adrenaline.
DESIGN: Neonatal fellows (n=10) underwent delivery room simulation involving an asystolic infant as part of their educational curriculum. Each intervention performed by the resuscitation team during the scenario was timed and compared against recommended timeline (RT) as suggested by NRP.
RESULTS: Ten simulations were conducted. Heart rate auscultation and initiation of positive pressure ventilation occurred on average within 10 s of the RT. Asystole was correctly identified by auscultation in 6 (60%) cases. Initiation of cardiopulmonary resuscitation on average was 60 s later than RT. Time to place an umbilical catheter was almost twice the RT (354±100 s) and time to first dose of intravenous adrenaline was almost 120 s later than the RT. Average time to discontinuation of resuscitation was 17 min, 43 s, which was 10 min, 42 s after initial intravenous adrenaline.
CONCLUSIONS: Critical resuscitation steps during intensive resuscitation often occur later than the RT. Identifying asystole by auscultation is difficult, takes time and can delay responses. Even a trained team during a simulation code took over 7 min to administer the initial dose of intravenous adrenaline. Recommendations related to discontinuation of resuscitation should clearly delineate what constitutes effective resuscitation (minimum of early intubation, intravenous adrenaline). We recommend the 'timer' to discontinuation of resuscitation only starts following the first dose of intravenous adrenaline.

3. West J Emerg Med. 2015 Sep;16(5):753-5. doi: 10.5811/westjem.2015.6.26093. Epub 2015 Oct 20.

Focused Cardiac Ultrasound Diagnosis of Cor Triatriatum Sinistrum in Pediatric Cardiac Arrest.

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Abstract

Cardiac arrest in the adolescent population secondary to congenital heart disease (CHD) is rare. Focused cardiac ultrasound (FoCUS) in the emergency department (ED) can yield important clinical information, aid in resuscitative efforts during cardiac arrest and is commonly integrated into the evaluation of patients with pulseless electrical activity (PEA). We report a case of pediatric cardiac arrest in which FoCUS was used to diagnose a critical CHD known as cor triatriatum sinistrum as the likely cause for PEA cardiac arrest and help direct ED resuscitation.

4. Pediatr Emerg Care. 2016 Sep;32(9):630-6. doi: 10.1097/PEC.0000000000000895.

Sudden Cardiac Arrest in Pediatrics.

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Author information:

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Abstract

Sudden cardiac arrest (SCA) in the pediatric population is a rare and potentially devastating occurrence. An understanding of the differential diagnosis for the etiology of the cardiac arrest allows for the most effective emergency care and provides the patient with the best possible outcome. Pediatric SCA can occur with or without prodromal symptoms and may occur during exercise or rest. The most common cause is arrhythmia secondary to an underlying channelopathy, cardiomyopathy, or myocarditis. After stabilization, evaluation should include electrocardiogram, chest radiograph, and echocardiogram. Management should focus on decreasing the potential for recurring arrhythmia, maintaining cardiac preload, and thoughtful medication use to prevent exacerbation of the underlying condition. The purpose of this review was to provide the emergency physician with a concise and current review of the incidence, differential diagnosis, and management of pediatric patients presenting with SCA.

POST-ROSC

1. Circ Arrhythm Electrophysiol. 2016 Sep;9(9). pii: e003798. doi: 10.1161/CIRCEP.115.003798.

Usefulness of Testing for Coronary Artery Spasm and Programmed Ventricular Stimulation in Survivors of Out-of-Hospital Cardiac Arrest.

Komatsu M1, Takahashi J1, Fukuda K1, Takagi Y 1, Shiroto T1, Nakano M1, Kondo M1, Tsuburaya R1, Hao K1, Nishimiya K1, Nihei T1, Matsumoto Y1, Ito K1, Sakata Y1, Miyata S1, Shimokawa H2.

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Abstract

BACKGROUND: Optimal therapy for patients resuscitated from out-of-hospital cardiac arrest (OHCA) who are not found to have structural heart disease remains to be established, especially regarding the use of implantable cardioverter-defibrillators. Coronary artery spasm (CAS) and lethal ventricular arrhythmias are important causes of OHCA.

METHODS AND RESULTS: In 47 consecutive OHCA survivors without structural heart disease who had fully recovered (M/F 44/3, 43±13 years.), we performed dual induction tests, including acetylcholine provocation test first followed by programmed ventricular stimulation after 1 to 2 weeks. Patients with CAS were treated with calcium channel blocker-based antianginal medications; implantable cardioverter-defibrillators were implanted in all patients. The results of the dual induction tests defined 4 groups: CAS alone (n=7), inducible ventricular arrhythmias alone (n=13), both positive (n=24), and both negative (n=3). During a median follow-up period of 38 months, ventricular fibrillation recurred in all groups except the both-negative group. Of the 16 patients with a type I Brugada ECG, 2 had CAS alone, 8 had ventricular arrhythmias alone, and 6 had both positive. No ventricular fibrillation episodes were observed in the CAS-alone patients who did not also have Brugada syndrome. Kaplan-Meier analysis showed that the CAS-alone group was at lower risk for OHCA recurrence as compared with the Brugada syndrome group (log-rank test; P=0.036).

CONCLUSIONS: Among OHCA survivors without structural heart disease, provokable CAS and ventricular arrhythmias are common and can be seen in Brugada syndrome. CAS alone without Brugada syndrome who are treated for CAS may be a lower-risk group.

2. Resuscitation. 2016 Aug 24. pii: S0300-9572(16)30434-8. doi: 10.1016/j.resuscitation.2016.08.017. [Epub ahead of print]

Amiodarone or nifekalant upon hospital arrival for refractory ventricular fibrillation after out-of-hospital cardiac arrest.

Tagami T1, Matsui H2, Ishinokami S3, Oyanagi M3, Kitahashi A3, Fukuda R3, Unemoto K3, Fushimi K4, Yasunaga H2.

Abstract

BACKGROUND: We evaluated the association between nifekalant or amiodarone and hospital admission and in-hospital mortality for cardiac arrest patients with persistent ventricular fibrillation on hospital arrival.

METHODS: This was a retrospective cohort study using the Japanese Diagnosis Procedure Combination inpatient database. We identified 2961 patients who suffered cardiogenic out-of-hospital cardiac arrest and who had ventricular fibrillation on hospital arrival between July 2007 and March 2013. Patients were categorized into amiodarone (n=2353) and nifekalant (n=608) groups, from which 525 propensity score-matched pairs were generated.

RESULTS: We found a significant difference in the admission rate between the nifekalant and amiodarone groups in propensity score-matched groups (75.6% vs. 69.3%, respectively; difference, 6.3%; 95% confidence interval (CI), 0.9-11.7). An analysis using the hospital nifekalant/amiodarone rate as an instrumental variable found that receiving nifekalant was associated with an improved admission rate (22.2%, 95% CI, 11.9-32.4). We found no significant difference in in-hospital mortality between the nifekalant and amiodarone groups (81.5% vs. 82.1%, respectively; difference, -0.6%; 95% CI, -5.2 to 4.1). Instrumental variable analysis showed that receiving nifekalant was not associated with reduced in-hospital mortality (6.2%, 95% CI, -2.4 to 14.8).

CONCLUSIONS: This nationwide study suggested no significant in-hospital mortality association between nifekalant and amiodarone for cardiogenic out-of-hospital cardiac arrest patients with ventricular fibrillation/persistent ventricular tachycardia on hospital arrival. Although nifekalant may potentially improve hospital admission rates compared with amiodarone for these patients, further studies are required to confirm our results

DOCÈNCIA

1. Am J Crit Care. 2016 Sep;25(5):393-9. doi: 10.4037/ajcc2016583.

Implementing an in Situ Mock Code Quality Improvement Program.

Herbers MD1, Heaser JA2.

Author information:

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- 2Megan D. Herbers is a registered nurse and Joseph A. Heaser is an ambulatory nurse manager at Mayo Clinic, Rochester, Minnesota.

Abstract

BACKGROUND:

The high risk and low volume of medical emergencies, combined with long periods between training sessions, on 2 progressive care units at Mayo Clinic, Rochester, Minnesota, established the importance of transforming how nursing staff are trained to respond to medical emergencies.

OBJECTIVES: To increase confidence levels and improve nursing performance during medical emergencies via in situ simulation.

METHODS: An in situ, mock code quality improvement program was developed and implemented to increase nurses' confidence while improving nursing performance when responding to medical emergencies. For 2 years, each unit conducted mock codes and collected data related to confidence levels and response times based on the recommendations in the 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care.

RESULTS: In those 2 years, nursing staff response times for calling for help improved 12%, time elapsed before initiating compressions improved 52%, and time to initial defibrillation improved 37%. Additionally, staff showed an increase in perceived confidence levels. Staff reported their appreciation of the opportunity for hands-on practice with the equipment, reinforcing their knowledge and refining their medical emergency skills.

CONCLUSIONS: In situ mock codes significantly improve response times and increase staff confidence levels. In situ mock codes are a quick and efficient way to provide hands-on practice and allow staff to work as a team.

Ensenyament de SVB a les escoles pels estudiants de Medicina

2. Resuscitation. 2016 Aug 27. pii: S0300-9572(16)30437-3. doi: 10.1016/j.resuscitation.2016.08.020. [Epub ahead of print]

Teaching school children basic life support improves teaching and basic life support skills of medical students: A randomised, controlled trial.

Beck S1, Meier-Klages V2, Michaelis M2, Sehner S3, Harendza S4, Zöllner C2, Kubitz JC2.

Abstract

BACKGROUND: The "kids save lives" joint-statement highlights the effectiveness of training all school children worldwide in cardiopulmonary resuscitation (CPR) to improve survival after cardiac arrest. The personnel requirement to implement this statement is high. Until now, no randomised controlled trial investigated if medical students benefit from their engagement in the BLS-education of school children regarding their later roles as physicians. The objective of the present study is to evaluate if medical students improve their teaching behaviour and CPR-skills by teaching school children in basic life support.

METHODS: The study is a randomised, single blind, controlled trial carried out with medical students during their final year. In total, 80 participants were allocated alternately to either the intervention or the control group. The intervention group participated in a CPR-instructor-course consisting of a 4h-preparatory seminar and a teaching-session in BLS for school children. The primary endpoints were effectiveness of teaching in an objective teaching examination and pass-rates in a simulated BLS-scenario.

RESULTS: The 28 students who completed the CPR-instructor-course had significantly higher scores for effective teaching in five of eight dimensions and passed the BLS-assessment significantly more often than the 25 students of the control group (Odds Ratio (OR): 10.0; 95%-CI: 1.9-54.0; p=0.007).

CONCLUSIONS: Active teaching of BLS improves teaching behaviour and resuscitation skills of students. Teaching school children in BLS may prepare medical students for their future role as a clinical teacher and support the implementation of the "kids save lives" statement on training all school children worldwide in BLS at the same time.

TTM

1. Resuscitation. 2016 Aug 30. pii: S0300-9572(16)30442-7. doi: 10.1016/j.resuscitation.2016.08.025. [Epub ahead of print]

A multicentre observational study of inter-hospital transfer for post-resuscitation care after out-of-hospital cardiac arrest.

Park JH1, Ahn KO2, Shin SD3, Song KJ3, Ro YS4, Kim JY5, Lee EJ3, Lee YJ6.

Author information:

Abstract

AIM: To provide therapeutic hypothermia (TH) to survivors after out-of-hospital cardiac arrest (OHCA), inter-hospital transfers (IHT) are frequently required. The safety of IHT remains controversial. The aim of this study was to investigate whether the effect of TH on brain recovery after OHCA differs between IHT and direct arrival groups.

METHODS: We identified patients with OHCA of presumed cardiac aetiology who were resuscitated by emergency medical services and experienced return-of-spontaneous circulation in 27 hospitals between January and December 2014. The main exposure variables were TH and IHT. The primary endpoint was discharge with good neurological recovery. We compared outcomes between the TH and non-TH groups using multivariable logistic regression with an interaction term between TH and IHT, after adjusting for potential confounders.

RESULTS: Among 1,616 patients, 576 patients were included in the final analyses. Neurologic recovery was better in the TH group (46.2%) than in the non-TH group (20.1%) (adjusted odds ratio [aOR] 2.03 [95% confidence interval (CI) 1.24-3.33]). In the interaction model for the outcome of good neurological recovery, the aOR for TH was 2.82 (95% CI 1.59-5.01) in the direct

transfer group vs. 0.76 (95% CI 0.29-2.01) in the IHT group. The measure of interaction on the multiplicative scale in this model was also statistically significant (OR 0.27 [95% CI 0.07-0.83]; p=0.02).
CONCLUSION: IHT modified the effect of TH on neurological recovery for survivors of OHCA. TH is significantly less beneficial for good neurological recovery in patients who arrive via IHT than for those who arrive directly.

RECERCA EXPERIMENTAL

1. Biomed Res Int. 2015;2015:279192. doi: 10.1155/2015/279192. Epub 2015 Oct 8.
Short Duration Combined Mild Hypothermia Improves Resuscitation Outcomes in a Porcine Model of Prolonged Cardiac Arrest.
Yu T1, Yang Z1, Li H2, Ding Y3, Huang Z1, Li Y4.
Abstract
OBJECTIVE: In this study, our aim was to investigate the effects of combined hypothermia with short duration maintenance on the resuscitation outcomes in a porcine model of ventricular fibrillation (VF).
METHODS: Fourteen porcine models were electrically induced with VF and untreated for 11 mins. All animals were successfully resuscitated manually and then randomized into two groups: combined mild hypothermia (CH group) and normothermia group (NT group). A combined hypothermia of ice cold saline infusion and surface cooling was implemented in the animals of the CH group and maintained for 4 hours. The survival outcomes and neurological function were evaluated every 24 hours until a maximum of 96 hours. Neuron apoptosis in hippocampus was analyzed.
RESULTS: There were no significant differences in baseline physiologies and primary resuscitation outcomes between both groups. Obvious improvements of cardiac output were observed in the CH group at 120, 180, and 240 mins following resuscitation. The animals demonstrated better survival at 96 hours in the CH group when compared to the NT group. In comparison with the NT group, favorable neurological functions were observed in the CH group.
CONCLUSION: Short duration combined cooling initiated after resuscitation improves survival and neurological outcomes in a porcine model of prolonged VF.

CASE REPORT

1. Crit Care Med. 2016 May;44(5):e300-3. doi: 10.1097/CCM.0000000000001430.
Does Thrombolysis Have a Place in the Cardiopulmonary Resuscitation of Patients With Acute Pulmonary Embolism? A Case of Successful Thrombolysis During Pulmonary Embolism Induced Cardiopulmonary Arrest.
Namiranian K1, Rathi NK, Banchs J, Price KJ, Nates JL, Haque SA.
Author information:
• 11Department of Anesthesiology, Cleveland Clinic, Cleveland, OH. 2Department of Critical Care, The University of Texas MD Anderson Cancer Center, Houston, TX. 3Department of Cardiology, The University of Texas MD Anderson Cancer Center, Houston, TX.
Abstract
OBJECTIVE: Pulmonary embolism often causes cardiac arrest. When this occurs, thrombolytic therapy is not routinely administered. There are multiple reasons for this, including difficulty with rapidly adequately diagnosing the embolus, the lack of good data supporting the use of thrombolytics during resuscitation, the belief that thrombolytic therapy is ineffective once a patient has already arrested, the difficulty of obtaining thrombolytics at the bedside rapidly enough to administer during a code, and the increased risks of bleeding, particularly with ongoing chest compressions. In this case report, we present a patient who was successfully treated with thrombolytic therapy during pulmonary embolism-induced cardiopulmonary arrest and discuss the role of thrombolytics in cardiopulmonary resuscitation.
DESIGN: Case report.
SETTING: Surgical ICU in a comprehensive cancer center.

PATIENT: A 56-year-old man who developed hypotension, dyspnea, hypoxia, and pulseless electrical activity 10 days after resection of a benign colon lesion with a right hemicolectomy and primary end-to-end anastomosis.
INTERVENTIONS: After a rapid bedside echocardiogram suggesting pulmonary embolus, thrombolytic therapy was administered during cardiopulmonary resuscitative efforts.
MEASUREMENTS AND MAIN RESULTS: The patient had a return of spontaneous circulation and showed improvement in repeat echocardiographic imaging. He had a prolonged course in the ICU and hospital, but eventually made an essentially complete clinical recovery.
CONCLUSION: As bedside echocardiographic technology becomes more rapidly and readily available, the rapid diagnosis of pulmonary embolism and use of thrombolytics during cardiopulmonary resuscitation may need to be more routinely considered a potential therapeutic adjunctive measure.

REGISTRES I REVISIONS

No val la pena que aneu a Qatar per comprovar-ho… Haurien de mirar si la supervivència varia entre natius de Qatar i expatriats.

1. Int J Cardiol. 2016 Aug 24;223:1007-1013. doi: 10.1016/j.ijcard.2016.08.299. [Epub ahead of print]

Epidemiology and outcomes of out-of-hospital cardiac arrest in Qatar: A nationwide observational study.

Irfan FB1, Bhutta ZA2, Castren M3, Straney L4, Djarv T5, Tariq T6, Thomas SH2, Alinier G7, Al Shaikh L8, Owen RC8, Al Suwaidi J9, Shuaib A10, Singh R11, Cameron PA12.

Abstract

BACKGROUND: Out-of-hospital cardiac arrest (OHCA) studies from the Middle East and Asian region are limited. This study describes the epidemiology, emergency health services, and outcomes of OHCA in Qatar.
METHODS: This was a prospective nationwide population-based observational study on OHCA patients in Qatar according to Utstein style guidelines, from June 2012 to May 2013. Data was collected from various sources; the national emergency medical service, 4 emergency departments, and 8 public hospitals.
RESULTS: The annual crude incidence of presumed cardiac OHCA attended by EMS was 23.5 per 100,000. The age-sex standardized incidence was 87.8 per 100,000 population. Of the 447 OHCA patients included in the final analysis, most were male (n=360, 80.5%) with median age of 51years (IQR=39-66). Frequently observed nationalities were Qatari (n=89, 19.9%), Indian (n=74, 16.6%) and Nepalese (n=52, 11.6%). Bystander cardiopulmonary resuscitation (CPR) was carried out in 92 (20.6%) OHCA patients. Survival rate was 8.1% (n=36) and multivariable logistic regression indicated that initial shockable rhythm (OR 13.4, 95% CI 5.4-33.3, p=0.001) was associated with higher odds of survival while male gender (OR 0.27, 95% CI 0.1-0.8, p=0.01) and advanced cardiac life support (ACLS) (OR 0.15, 95% CI 0.04-0.5, p=0.02) were associated with lower odds of survival.
CONCLUSIONS: Standardized incidence and survival rates were comparable to Western countries. Although expatriates comprise more than 80% of the population, Qataris contributed 20% of the total cardiac arrests observed. There are significant opportunities to improve outcomes, including community-based CPR and defibrillation training.

2. Crit Care. 2016 Sep 6;20:282. doi: 10.1186/s13054-016-1463-6.

Outcome and predictors for successful resuscitation in the emergency room of adult patients in traumatic cardiorespiratory arrest.

Zwingmann J1, Lefering R2, Feucht M3, Südkamp NP3, Strohm PC4, Hammer T3.

Abstract

BACKGROUND: Data of the TraumaRegister DGU® were analyzed to derive survival rates, neurological outcome and prognostic factors of patients who had suffered traumatic cardiac arrest in the early treatment phase.
METHODS: The database of the TraumaRegister DGU® from 2002 to 2013 was analyzed. The main focus of this survey was on different time points of performed resuscitation. Descriptive and multivariate analyses (logistic regression) were performed with the neurological outcome (Glasgow Outcome Scale) and survival rate as the target variable. Patients were classified

according to CPR in the prehospital phase and/or in the emergency room (ER). Patients without CA served as a control group. The database does not include patients who required prehospital CPR but did not achieve ROSC.
RESULTS: A total of 3052 patients from a total of 38,499 cases had cardiac arrest during the early post-trauma phase and required CPR in the prehospital phase and/or in the ER. After only prehospital resuscitation (n = 944) survival rate was 31.7 %, and 14.7 % had a good/moderate outcome. If CPR was required in the ER only (n = 1197), survival rate was 25.6 %, with a good/moderate outcome in 19.2 % of cases. A total of 4.8 % in the group with preclinical and ER resuscitation survived, and just 2.7 % had a good or moderate outcome. Multivariate logistic regression analysis revealed the following prognostic factors for survival after traumatic cardiac arrest: prehospital CPR, shock, coagulopathy, thorax drainage, preclinical catecholamines, unconsciousness, and injury severity (Injury Severity Score).
CONCLUSIONS: With the knowledge that prehospital resuscitated patients who not reached the hospital could not be included, CPR after severe trauma seems to yield a better outcome than most studies have reported, and appears to be more justified than the current guidelines would imply. Preclinical resuscitation is associated with a higher survival rate and better neurological outcome compared with resuscitation in the ER. If resuscitation in the ER is necessary after a preclinical performed resuscitation the survival rate is marginal, even though 56 % of these patients had a good and moderate outcome. The data we present may support algorithms for resuscitation in the future.

Cal veure si han ajustat els resultats per edat...

3. Obstet Gynecol. 2016 Sep 5. [Epub ahead of print]

Differences in Mortality Between Pregnant and Nonpregnant Women After Cardiopulmonary Resuscitation.

Mogos MF1, Salemi JL, Spooner KK, McFarlin BL, Salihu HM.

Abstract

OBJECTIVE: To examine the association between pregnancy status and in-hospital mortality after cardiopulmonary resuscitation (CPR) in an inpatient setting.
METHODS: We conducted a population-based cross-sectional study using the Nationwide Inpatient Sample databases (2002-2011). International Classification of Diseases, 9th Revision, Clinical Modification codes were used to define cases, comorbidities, and clinical outcomes. Rates of CPR among study groups were calculated by patient and hospital characteristics. Survey logistic regression was used to estimate adjusted odds ratios (ORs) that represent the association between pregnancy status and mortality after CPR. Joinpoint regression was used to describe temporal trends in CPR and mortality rates.
RESULTS: During the study period, 5,923 women (13-49 years) received inpatient CPR annually. Cardiopulmonary resuscitation rates increased significantly from 2002 to 2011, by 6.4% and 3.8% annually, for pregnant and nonpregnant women, respectively. In-hospital mortality rates after CPR were lower among pregnant women 49.4% (45.4-53.4) than nonpregnant women 71.1% (70.1-72.2), even after adjusting for confounders (adjusted OR 0.46, 95% confidence interval 0.39-0.56).
CONCLUSION: Cardiopulmonary resuscitation in an inpatient pregnant woman is associated with improved survival compared with this procedure in nonpregnant women. Elucidating reasons behind this association could help to improve CPR outcomes in both pregnant and nonpregnant women.

4. Resuscitation. 2016 Aug 31;108:20-26. doi: 10.1016/j.resuscitation.2016.08.026. [Epub ahead of print]

Effects of Dispatcher-assisted Cardiopulmonary Resuscitation on Survival Outcomes in Infants, Children, and Adolescents with Out-of-hospital Cardiac Arrests.

Ro YS1, Shin SD2, Song KJ3, Hong KJ4, Ahn KO5, Kim DK6, Kwak YH7.

Abstract

OBJECTIVE: We studied the effect of a dispatcher-assisted cardiopulmonary resuscitation (CPR) program on paediatric out-of-hospital cardiac arrest (OHCA) outcomes by age groups.

METHODS: All emergency medical services (EMS)-treated paediatric OHCAs in Korea were enrolled between 2012 and 2014, excluding cases witnessed by EMS providers and those with unknown outcomes. The cases were divided into three groups: bystander CPR with dispatcher assistance, bystander CPR without dispatcher assistance, and no-bystander CPR. The endpoint was survival until discharge from hospital. Multivariable logistic regression analysis was performed. The final model with an interaction term was evaluated to compare the effects across age groups.
RESULTS: A total of 1529 patients (32.8% bystander CPR with dispatcher assistance, 17.3% without dispatcher assistance, and 54.6% no-bystander CPR) were included. Both bystander CPR groups were more likely to have higher rate of survival to discharge (8.8% and 12.1%) compared to no-bystander CPR (3.9%). The adjusted OR (95% CI) for survival to discharge were 1.77 (1.04-3.00) in bystander CPR with dispatcher assistance and 2.86 (1.61-5.08) in without dispatcher assistance compared with no-bystander CPR. By age groups, the adjusted OR (95% CI) in bystander CPR with and without dispatcher assistance were 2.18 (1.07-4.42) and 2.27 (1.01-5.14) for the group aged 9-18 years; 2.32 (0.64-8.44) and 6.21 (1.83-21.01) for the group aged 1-8 years; 1.06 (0.41-2.77) and 2.00 (0.64-6.18) for the group aged 0-12 months, respectively.
CONCLUSIONS: Bystander CPR, regardless of dispatcher assistance, was associated with improved survival outcomes after OHCA in the paediatric population. However, the associations between dispatcher-assisted bystander CPR and survival outcomes varied by age.

5. Resuscitation. 2016 Sep 6. pii: S0300-9572(16)30439-7. doi: 10.1016/j.resuscitation.2016.08.022. [Epub ahead of print]

Determining witnessed status for out-of-hospital cardiac arrest.

Lewis MM1, Stubbs BA2, Eisenberg MS3.

Abstract

OBJECTIVE: Witnessed status is considered a core variable in reporting cardiac arrest data and can be ascertained from either the emergency dispatch recording or the pre-hospital record. The purpose of this study is to compare and assess the quality and consistency of these information sources.
METHODS: This retrospective analysis included 1896 cases of out-of-hospital cardiac arrest occurring between September 1, 2012 and December 31, 2014.
RESULTS: We found that there was minimal (kappa=0.30, 95% CI 0.27-0.33) to moderate (kappa=0.64, 95% CI 0.59-0.69) agreement between the pre-hospital record and the emergency dispatch recording when these sources of information are used to determine witnessed status. Witnessed status could not be determined from the emergency dispatch recording in 36.2% (n=684) of eligible cases. Survival was similar regardless of the method used to determine witnessed status. Using a combination of the pre-hospital record and the emergency dispatch recording yielded the highest number of witnessed cases.
CONCLUSION: The determination of witnessed status in out-of-hospital cardiac arrest may be challenging, as evidenced by the discrepancies in witnessed status when comparing different sources of information. The large number of cases where the witnessed status could not be determined from the emergency dispatch recording precludes its use as the sole source of information. It is reasonable to use the patient care record alone, however it should be recognized that there is misclassification of witnessed status regardless of the method used and this may affect the strength of association between witnessed status and survival.

DESFIBRIL·LACIÓ I ELECTROFISIOLOGIA

1. J Cardiol. 2016 Sep 3. pii: S0914-5087(16)30179-4. doi: 10.1016/j.jjcc.2016.08.004. [Epub ahead of print]

Potential roles of the wearable cardioverter-defibrillator in acute phase care of patients at high risk of sudden cardiac death: A single-center Japanese experience.

Sasaki S1, Shoji Y2, Ishida Y2, Kinjo T2, Tsushima Y2, Seno M2, Nishizaki F2, Itoh T2, Izumiyama K2, Yokota T2, Yokoyama H2, Yamada M2, Horiuchi D1, Kimura M2, Higuma T2, Tomita H2, Okumura K3.

Abstract
BACKGROUND: The wearable cardioverter-defibrillator (WCD) has been expected to play a role as an effective bridge therapy to implantable cardioverter-defibrillator (ICD) implantation in patients at high risk of ventricular tachyarrhythmias (VA). Although WCD has been available since April 2014 in Japan, its usefulness remains unclear.
METHODS AND RESULTS: During the early period after hospitalization, patients at high risk of VA after excluding some elderly patients were prescribed WCD. The consecutive 50 patients with WCD use (median age 56 years, 38 for secondary prevention) were studied. We analyzed clinical efficacy and safety of WCD, and examined its potential roles. Of the 50 patients, 38 used WCD only during hospitalization. During WCD use [median 16 (IQR 8-33) days], all patients wore WCD for 98% of a day regardless of in or out-of-hospital use. Sustained VA was detected in 4 patients (8%; for primary prevention in 1) with 7 episodes, and 6 of 7 episodes required shock therapy. Of the 6 shock therapies, 4 were for sustained ventricular tachycardia with the median rate of 236beats/min (IQR 203-250), and the other 2 for ventricular fibrillation. Subsequently, only 27 patients (54%) of all underwent ICD implantation following the WCD use, because of reduced risk of VA after optimal pharmacological therapy or improvement in the left ventricular function.
CONCLUSIONS: The WCD use for the acute phase care of patients at high risk of VA can be safe and effective, and may be useful for evaluating indication of ICD implantation.


Imatge d'un wearable Cardioverter-defib.

2. JAMA Cardiol. 2016 Sep 7. doi: 10.1001/jamacardio.2016.2782. [Epub ahead of print]
Trends and In-Hospital Outcomes Associated With Adoption of the Subcutaneous Implantable Cardioverter Defibrillator in the United States.
Friedman DJ1, Parzynski CS2, Varosy PD3, Prutkin JM4, Patton KK4, Mithani A5, Russo AM5, Curtis JP2, Al-Khatib SM1.
Abstract
Importance: Trends and in-hospital outcomes associated with early adoption of the subcutaneous implantable cardioverter defibrillator (S-ICD) in the United States have not been described.
Objectives: To describe early use of the S-ICD in the United States and to compare in-hospital outcomes among patients undergoing S-ICD vs transvenous (TV)-ICD implantation.
Design, Setting, and Participants: A retrospective analysis of 393 734 ICD implants reported to the National Cardiovascular Data Registry ICD Registry, a nationally representative US ICD registry, between September 28, 2012 (US Food and Drug Administration S-ICD approval date), and March 31, 2015, was conducted. A 1:1:1 propensity-matched analysis of 5760 patients was performed to compare in-hospital outcomes among patients with S-ICD with those of patients with single-chamber (SC)-ICD and dual-chamber (DC)-ICD.
Main Outcomes and Measures: Analysis of trends in S-ICD adoption as a function of total ICD implants and comparison of in-hospital outcomes (death, complications, and defibrillation threshold [DFT] testing) among S-ICD and TV-ICD recipients.
Results: Of the 393 734 ICD implants evaluated during the study period, 3717 were S-ICDs (0.9%). A total of 109 445 (27.8%) of the patients were female; the mean (SD) age was 67.03 (13.10) years. Use of ICDs increased from 0.2% during the fourth quarter of 2012 to 1.9% during

the first quarter of 2015. Compared with SC-ICD and DC-ICD recipients, those with S-ICDs were more often younger, female, black, undergoing dialysis, and had experienced prior cardiac arrest. Among 2791 patients with S-ICD who underwent DFT testing, 2588 (92.7%), 2629 (94.2%), 2635 (94.4%), and 2784 (99.7%) were successfully defibrillated (≤65, ≤70, ≤75, and ≤80 J, respectively). In the propensity-matched analysis of 5760 patients, in-hospital complication rates associated with S-ICDs (0.9%) were comparable to those of SC-ICDs (0.6%) (P = .27) and DC-ICD rates (1.5%) (P = .11). Mean (SD) length of stay after S-ICD implantation was comparable to that after SC-ICD implantation (1.1 [1.5] vs 1.0 [1.2] days; P = .77) and less than after DC-ICD implantation (1.1 [1.5] vs 1.2 [1.5] days; P < .001).
Conclusions and Relevance: The use of S-ICDs is rapidly increasing in the United States. Early adoption has been associated with low complication rates and high rates of successful DFT testing despite frequent use in patients with a high number of comorbidities.

TRAUMA

1. J Trauma Acute Care Surg. 2016 Sep 3. [Epub ahead of print]
Angiographic embolization for hemorrhage following pelvic fracture: Is it "time" for a paradigm shift?
Tesoriero R1, Bruns B, Narayan M, Dubose J, Guliani S, Brenner M, Boswell S, Stein DM, Scalea T.
Abstract
INTRODUCTION: Major pelvic disruption with hemorrhage has a high rate of lethality. Angiographic embolization remains the mainstay of treatment. Delays to angiography have been shown to worsen outcomes, in part because time spent awaiting mobilization of resources needed to perform angiography allows ongoing hemorrhage. Alternative techniques like pelvic pre-peritoneal packing (PPP) and aortic balloon occlusion (REBOA) now exist. We hypothesized that time to angiographic embolization at our level 1 trauma center would be longer than 90 minutes.
METHODS: A retrospective review was performed of patients with pelvic fracture who underwent pelvic angiography at our trauma center over a 10 year period. The trauma registry was queried for age, sex, injury severity score (ISS), hemodynamic instability (HI) on presentation, and transfusion requirements within 24hrs. Charts were reviewed for time to angiography, embolization, and mortality.
RESULTS: 4712 patients were admitted with pelvic fractures during the study period, 344 (7.3%) underwent pelvic angiography. Median ISS was 29. Median 24 hour transfusion requirements were 5 units of RBC's and 6 units of FFP. 151 (43.9%) presented with HI and 104 (30%) received massive transfusion (MT). Median time to angiography was 286 min (interquartile range [IQR] 210-378). Times were significantly shorter when stratified for HI (HI 264 vs stable 309 min; p=0.003), and MT (MT 230 vs non-MT 317min; p < 0.001), but still took nearly 4 hours. Overall mortality was 18%. Hemorrhage (35.5%) and sepsis/multiple organ failure (43.5%) accounted for most deaths.
CONCLUSION: Pelvic fracture hemorrhage remains a management challenge. In this series the median time to embolization was over 5 hours. Nearly 80% of deaths could be attributed to early uncontrolled hemorrhage and linked to delays in hemostasis. Earlier intervention by Acute Care Surgeons with techniques like PPP, REBOA, and utilization of hybrid operative suites may improve outcomes.

FÀRMACS

1. Resuscitation. 2016 Aug 31. pii: S0300-9572(16)30444-0. doi: 10.1016/j.resuscitation.2016.08.027. [Epub ahead of print]
Effects of epinephrine on cerebral oxygenation during cardiopulmonary resuscitation: A prospective cohort study.
Deakin CD1, Yang J2, Nguyen R2, Zhu J2, Brett SJ3, Nolan JP4, Perkins GD5, Pogson DG6, Parnia S2.
Abstract

BACKGROUND: Epinephrine has been presumed to improve cerebral oxygen delivery during cardiopulmonary resuscitation (CPR), but animal and registry studies suggest that epinephrine-induced capillary vasoconstriction may decrease cerebral capillary blood flow and worsen neurological outcome. The effect of epinephrine on cerebral oxygenation (rSO2) during CPR has not been documented in the clinical setting.
METHODS: rSO2 was measured continuously using cerebral oximetry in patients with in-hospital cardiac arrest. During CPR, time event markers recorded the administration of 1mg epinephrine. rSO2 values were analysed for a period beginning 5min before and ending 5min after the first epinephrine administration.
RESULTS: A total of 56 epinephrine doses were analysed in 36 patients during CPR. The average rSO2 value in the 5-min following epinephrine administration was 1.40% higher (95% CI=0.41-2.40%; P=0.0059) than in the 5-min period before epinephrine administration. However, there was no difference in the overall rate of change of rSO2 when comparing the 5-min period before, with the 5-min period immediately after a single bolus dose of epinephrine (0.88%/min vs 1.07%/min respectively; P=0.583), There was also no difference in the changes in rSO2 at individual 1, 2, 3, or 4-min time windows before and after a bolus dose of epinephrine (P=0.5827, 0.2371, 0.2082, and 0.6707 respectively).
CONCLUSIONS: A bolus of 1mg epinephrine IV during CPR produced a small but clinically insignificant increase in rSO2 in the five minutes after administration. This is the first clinical data to demonstrate the effects of epinephrine on cerebral rSO2 during CPR.

2. Am J Emerg Med. 2016 Aug 19. pii: S0735-6757(16)30513-7. doi: 10.1016/j.ajem.2016.08.026. [Epub ahead of print]
Favorable neurological outcomes by early epinephrine administration within 19 minutes after emergency medical service call for out-of-hospital cardiac arrest patients.
Tanaka H1, Takyu H2, Sagisaka R2, Ueta H2, Shirakawa T2, Kinoshi T3, Takahashi H3, Nakagawa T4, Shimazaki S2, Ong Eng Hock M5.
Abstract
OBJECTIVE: To evaluate the time-independent effect of the early administration of epinephrine (EPI) on favorable neurological outcome (as CPC [cerebral performance category] 1-2) at 1 month in patients with out-of-hospital cardiac arrest.
MATERIALS AND METHODS: A total of 119 639 witnessed cardiac arrest patients from 2008 to 2012 were eligible for this nationwide, prospective, population-based observational study. Patients were divided into EPI group (n = 20 420) and non-EPI group (n = 99 219). To determine the time-dependent effects of EPI, EPI-administered patients were divided into 4 groups as follows: early EPI (5-18 min), intermediate EPI (19-23 min), late EPI (24-29 min), and very late EPI (30-62 min), respectively. Multiple logistic regression analyses and adjusted odds ratios (AORs) were determined for CPC 1-2 at 1 month (primary outcome) and field return of spontaneous circulation (as secondary outcome) among the groups.
RESULTS: The EPI and non-EPI group had identical background, but EPI group shows higher incidence public access defibrillation and emergency medical technician defibrillation delivered than the non-EPI group. The differences were clinically negligible. Higher return of spontaneous circulation rate (18.0%) and lower CPC 1-2 (2.9%) shown in the EPI group than in the non-EPI group (9.4% and 5.2%). In the time dependent analysis, CPC 1 to 2 was greatest in the early EPI group (AOR, 2.49; 95% confidence interval [CI], 1.90-3.27), followed by the intermediate EPI group (AOR, 1.53; 95% CI, 1.14-2.05) then the late EPI group (AOR, 0.71; 95% CI, 0.47-1.08) as reference.
CONCLUSION: Early EPI administration within 19 minutes after emergency medical service call independently improved the neurological outcome compared with late EPI (24-29 minutes) administration in patients with out-of-hospital cardiac arrest.

POST ACR

1. J Crit Care. 2016 Aug 13;37:13-18. doi: 10.1016/j.jcrc.2016.08.011. [Epub ahead of print]
Decreased a disintegrin-like and metalloprotease with thrombospondin type 1 motif 13 activity and neurologic outcome in patients with successful resuscitation of out-of-hospital cardiac arrest: A prospective observational study.

Ohbe H1, Kudo D2, Yamanouchi S3, Kushimoto S4.

Abstract

PURPOSE: The purpose of this study is to investigate the association between a disintegrin-like and metalloprotease with thrombospondin type 1 motif 13 (ADAMTS13) and neurologic outcome in patients with resuscitation of out-of-hospital cardiac arrest (R-OHCA).

MATERIALS AND METHODS: A prospective observational study of adult patients with R-OHCA was conducted. Plasma activity of ADAMTS13 and inflammatory markers, an immunologic marker, and a marker of endothelial damage were measured on admission and day 2. Neurologic outcome was evaluated using the Cerebral Performance Categories on day 90.

RESULTS: Plasma activity of ADAMTS13 on day 2 was lower in patients with poor neurologic outcome (n = 18) than that in those with good neurologic outcome (n = 16; P = .008). It was also lower in 28-day nonsurvivors (n = 12) than in survivors (n = 21; P = .019). Soluble thrombomodulin showed a strong correlation with ADAMTS13 (P = .021). Furthermore, ADAMTS13 activity was negatively correlated with the Sequential Organ Failure Assessment score (P < .001), levels of high-mobility group box 1 (P = .028), and levels of interleukin 6 (P = .047) but positively correlated with the monocyte expression of human leukocyte antigen DR (P = .023).

CONCLUSION: Decreased ADAMTS13 activity was associated with poor neurologic outcome, high mortality, and worsened immune-inflammatory status in patients with R-OHCA. These results suggest that ADAMTS13 may have pathophysiologic relevance in postcardiac arrest syndrome.

TARGET TEMEPEARTURE MANAGEMENT

1. J Cardiothorac Surg. 2016 Apr 5;11:43. doi: 10.1186/s13019-016-0437-8.

Therapeutic hypothermia in adult patients receiving extracorporeal life support: early results of a randomized controlled study.

Pang PY1, Wee GH2, Hoo AE3, Sheriff IM2, Lim SL4, Tan TE4, Loh YJ4, Kerk KL5, Sin YK4, Lim CH4,5.

Abstract

Cardiac arrest with cerebral ischaemia frequently leads to severe neurological impairment. Extracorporeal life support (ECLS) has emerged as a valuable adjunct in resuscitation of cardiac arrest. Despite ECLS, the incidence of permanent neurological injury remains high. We hypothesize that patients receiving ECLS for cardiac arrest treated with therapeutic hypothermia at 34 °C have lower neurological complication rates compared to standard ECLS therapy at normothermia. Early results of this randomized study suggest that therapeutic hypothermia is safe in adult patients receiving ECLS, with similar complication rates as ECLS without hypothermia. Further studies are warranted to measure the efficacy of this therapy.

RECERCA EXPERIMENTAL

1. Neonatology. 2016;109(1):22-30. doi: 10.1159/000439020. Epub 2015 Oct 14.

Effect of Different Respiratory Modes on Return of Spontaneous Circulation in a Newborn Piglet Model of Hypoxic Cardiac Arrest.

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Abstract

BACKGROUND:

There are no clear evidence-based recommendations on the use of different techniques of respiratory support and chest compressions (CC) during neonatal cardiopulmonary resuscitation (CPR).

OBJECTIVES:

To determine the effects of different respiratory support strategies along with CC representing clinical practice on the return of spontaneous circulation (ROSC) in hypoxic newborn piglets with cardiac arrest. We hypothesized that use of a T-piece resuscitator (TPR) providing positive end-

expiratory pressure (PEEP) reduces time to ROSC as compared to a self-inflating bag (SIB) without PEEP. Furthermore, we explored the effects of a ventilator providing inflations without synchrony to CC.
METHODS:
Thirty-three newborn piglets were exposed to hypoxia until asystole occurred and randomized into three groups and resuscitated according to ILCOR guidelines: group 1 = TPR [peak inspiratory pressure (PIP)/PEEP of 25/5 cm H2O, rate 30/min], inflations interposed between CC (3:1 ratio); group 2 = SIB (PIP of 25 cm H2O without PEEP, rate 30/min), inflations interposed between CC (3:1 ratio), and group 3 = ventilator (PIP/PEEP of 25/5 cm H2O, rate 30/min), CC were applied with a rate of 120/min without synchrony to inflations. Animals were supported for 120 min after ROSC. Primary outcome was time to ROSC.
RESULTS:
All animals achieved ROSC. We found no significant difference in time to ROSC between groups [median (IQR); TPR: 150 s (150-210); SIB: 150 s (120-180); ventilator: 180 s (150-345)]. There was no difference in use of epinephrine, in blood gases or hemodynamic parameters during the 120-min observation time after ROSC.
CONCLUSIONS:
We found no significant effect of different respiratory support strategies during CPR on ROSC.

2. J Interferon Cytokine Res. 2016 Sep 8. [Epub ahead of print]
High Serum Tumor Necrosis Factor Levels in the Early Post-Cardiac Arrest Period Are Associated with Poor Short-Term Survival in a Swine Model of Ventricular Fibrillation.
Youngquist ST1, Shah AP2, Rosborough JP3, Niemann JT3,4.
Abstract
Most resuscitated victims of out-of-hospital cardiac arrest who survive to hospital expire due to the postresuscitation syndrome. This syndrome is characterized by a sepsis-like proinflammatory state. The objective of this investigation was to determine whether a relationship exists between the rise of tumor necrosis factor (TNF), a proinflammatory cytokine, following return of spontaneous circulation (ROSC), and early postarrest survival in a clinically relevant animal model of spontaneous ventricular fibrillation (VF). Mixed-breed Yorkshire swine (n = 20), weighing 39 ± 5 kg, were anesthetized and catheters placed in the right atrium and left ventricle/ascending aorta for continuous pressure monitoring. VF was induced by occluding the left anterior descending coronary artery with an angioplasty balloon. After 7 min of untreated VF, advanced life support resuscitation attempts were made for up to 20 min. Animals achieving ROSC were monitored for 3 h and fluid and pressor support was administered as needed. TNF levels were measured before VF and at 0, 15, and 30 min after ROSC using quantitative sandwich enzyme-linked immunosorbent assay. Twelve (60%) animals experienced early death, expiring during the 3 hour postarrest period (9 pulseless electrical activity, 2 VF, and 1 asystole). The TNF level at 15 min post-ROSC was significantly associated with death within the first 3 h post-ROSC with a univariate odds ratio of 1.4 [95% confidence interval (CI) 1.05-2.2, P = 0.01]. Using a cutoff TNF level of 525 pg/mL at 15 min post-ROSC had 100% negative predictive value (95% CI 0%-37%) and 67% positive predictive value (95% CI 35%-90%) for early death with a hazard ratio of 6.6 (95% CI 1.9-23.5). TNF increases shortly after ROSC and is predictive of early death. Early identification of resuscitated victims at greatest risk for hemodynamic collapse and recurrent arrest might facilitate the use of early hospital-based interventions to decrease the likelihood of a poor outcome.

3. Intensive Care Med Exp. 2016 Dec;4(1):25. doi: 10.1186/s40635-016-0101-6. Epub 2016 Sep 9.
The effects of early high-volume hemofiltration on prolonged cardiac arrest in rats with reperfusion by cardiopulmonary bypass: a randomized controlled animal study.
Shinozaki K1,2, Lampe JW3, Kim J3, Yin T3, Da T4, Oda S5, Hirasawa H5, Becker LB3.
Abstract
BACKGROUND: It is not yet clear whether hemofiltration can reduce blood cytokine levels sufficiently to benefit patients who suffer prolonged cardiac arrest (CA) treated with cardiopulmonary bypass (CPB). We sought to assess effects of high-volume and standard volume

continuous veno-venous hemofiltration (CVVH) on blood cytokine levels and survival in a rat model of prolonged CA treated with CPB.
METHODS: Sprague-Dawley male rats were subjected to 12 min of asphyxia to induce CA. CPB was initiated for resuscitation of animals and maintained for 30 min. Twenty-four rats were randomly assigned into three groups: without CVVH treatment (sham); standard volume CVVH at a filtration rate of 35-45 mL/kg/h; and high-volume hemofiltration (HVHF, 105-135 mL/kg/h). Hemofiltration was started simultaneously with CPB and maintained for 6 h. Plasma TNFα and IL-6 levels were measured at baseline, 0.5, 1, 2, 3, and 6 h after reperfusion. Survival time, neurological deficit score, and hemodynamic status were assessed.
RESULTS: All animals survived over 6 h and died within 24 h. There were no significant differences in survival time (log-rank test, sham vs. CVVH; $p = 0.49$, sham vs. HVHF; $p = 0.33$) or neurological deficit scores (ANOVA, $p = 0.14$) between the groups. There were no significant differences in blood cytokine levels between the groups. Mean blood pressure in sham group animals increased to 1.5-fold higher than baseline levels at 30 min. HVHF significantly reduced blood pressure to 0.7-fold of sham group ($p < 0.01$).
CONCLUSIONS: There was no improvement in mortality, neurological dysfunction, TNFα, or IL-6 levels in rats after prolonged CA with CPB on either hemofiltration group when compared to the sham group.

CASE REPORTS

1. J Community Hosp Intern Med Perspect. 2016 Sep 7;6(4):31695. doi: 10.3402/jchimp.v6.31695. eCollection 2016.

Prolonged cardiac arrest complicating a massive ST-segment elevation myocardial infarction associated with marijuana consumption.

Orsini J1, Blaak C2, Rajayer S2, Gurung V2, Tam E2, Morante J2, Shamian B2, Malik R2.

Abstract

Recreational substance use and misuse constitute a major public health issue. The annual rate of recreational drug overdose-related deaths is increasing exponentially, making unintentional overdose as the leading cause of injury-related deaths in the United States. Marijuana is the most widely used recreational illicit drug, with approximately 200 million users worldwide. Although it is generally regarded as having low acute toxicity, heavy marijuana usage has been associated with life-threatening consequences. Marijuana is increasingly becoming legal in the United States for both medical and recreational use. Although the most commonly seen adverse effects resulting from its consumption are typically associated with neurobehavioral and gastrointestinal symptoms, cases of severe toxicity involving the cardiovascular system have been reported. In this report, the authors describe a case of cannabis-associated ST-segment elevation myocardial infarction leading to a prolonged cardiac arrest.