BIBLIOGRAFIA DEL MES DE NOVEMBRE RECOMANADA PEL CCR

PREVENCIÓ DE L'ACR

Els early warning scores funcionen! Fonaments pel curs de SVI!

N Z Med J. 2013 Nov 1;126(1385):26-34.
Evaluating the impact of implementing an early warning score system on incidence of in-hospital cardiac arrest.
Drower D, McKeany R, Jogia P, Jull A.
Source: Rapid Response System Project, Waikato District Health Board, Hamilton, New Zealand. drowerd@gmail.com.
Abstract
AIM: To evaluate the introduction of an early warning score (EWS) system on incidence of in-hospital adult cardiac arrest.
METHODS: A before-after evaluation of an EWS system (in the form of a patient observation chart with escalation protocol) in a 600 bed tertiary teaching hospital in New Zealand during the two 12-month periods between March 2009 and March 2011. Difference in incidence rates was compared using Student's t test.
RESULTS: There were 168 cardiac arrests during the 24 month period. The incidence rate of cardiac arrests per 1000 admissions was 4.67 during 2009-2010 and 2.91 during 2010-2011 (mean difference of 1.77, 95%CI 0.59-2.94). The number of cardiac arrests dropped from an average of 8.5 arrests per month during 2009-2010 to 5.5 arrests per month during 2010-2011 following the introduction of ADDS (mean difference 3.0, 95%CI 0.78-5.22). There was no significant increase in the number of medical emergency calls (7.5 calls versus 9.1 calls per month).
CONCLUSION: Introduction of an EWS system in addition to an existing cardiac arrest team response decreased the incidence of in-hospital cardiac arrests in a tertiary hospital in New Zealand.

COMPRESSIONS TORÀCIQUES

Una revisió dolenta sobre compressors toràcics mecànics. Els LUCAS no han tingut mai forats, ni aquí ni als USA. Per què us la poso si no es bona? Perquè si us en parlen, sabeu que no és gaire bona.

Future Cardiol. 2013 Nov;9(6):863-73. doi: 10.2217/fca.13.70.
Role of manual and mechanical chest compressions during resuscitation efforts throughout cardiac arrest.
Ewy GA, Zuercher M.
Source: Sarver Heart Center, University of Arizona College of Medicine, Tucson, AZ 85724, USA. gaewy@aol.com.
Abstract
The previously published randomized trials of mechanical versus manual resuscitation of patients with cardiac arrest are inconclusive, but a recent systematic review concluded: "There is no evidence that mechanical cardiopulmonary resuscitation devices improve survival; to the contrary they may worsen neurological outcome." However, in our view, none of the randomized trials to date are definitive as the manual groups with primary cardiac arrest have not been treated optimally; that is, with minimally interrupted manual chest compressions, as advocated with cardiocerebral resuscitation. Since the mechanical chest compression devices work on different principles, it is possible that, while they may not be as effective and may even be worse in some subsets of patients, they may be preferable in others. Nevertheless, there are situations where manual chest compressions are not practical and, in these, mechanical devices may well be preferable. The Thumper(®) (Michigan Instruments, MI, USA) and the LUCAS™ (Jolife AB, Lund, Sweden) devices produce sternal compressions at 100 per min. By contrast, the AutoPulse(®) (ZOLL

Circulation, CA, USA) produces chest compressions at a rate of only 80 per min. Since chest compression rate, as reviewed in this article, is important, one would guess that the devices that can produce a faster rate would be more effective. On the other hand, it could be that sternal compressions with manual or mechanical devices may be more or less effective depending on the arrested patient's chest configuration. We speculate that in the subset of patients with barrel chests, where sternal compressions are less likely to be operative, the AutoPulse might be more effective, but less effective in thin-chested individuals, where direct cardiac compression is the major mechanism of forward blood flow in the manual, Thumper and LUCAS methods. The original LUCAS device had the potential of active decompression as well as compression. To market in the USA, holes had to be placed in the 'suction cup'. It would be informative to know whether the original LUCAS device is more effective than the device in which the active decompression has been deactivated

Cap dels tres dispositius de feedback millora la qualitat de les compressions toràciques i s'associa a un major retard en l'inici de la RCP, tot i que això hauria d'arreglar-se amb entrenament en l'ús del dispositiu

Resuscitation. 2013 Nov 8. pii: S0300-9572(13)00835-6. doi: 10.1016/j.resuscitation.2013.10.028. [Epub ahead of print]

Comparing three CPR feedback devices (used in this study) and standard BLS in a single rescuer scenario: a randomised simulation study.

Zapletal B, Greif R, Stumpf D, Nierscher FJ, Frantal S, Haugk M, Ruetzler K, Schlimp C, Fischer H.
Source: Resident, Department of Anaesthesia, General Intensive Care and Pain Medicine, Medical University Vienna, Austria.

Abstract
Background Efficiently performed basic life support (BLS) after cardiac arrest is proven to be effective. However, cardiopulmonary resuscitation (CPR) is strenuous and rescuers' performance declines rapidly over time. Audio-visual feedback devices reporting CPR quality may prevent this decline. We aimed to investigate the effect of various CPR feedback devices on CPR quality.
Methods In this open, prospective, randomised, controlled trial we compared three CPR feedback devices (PocketCPR®, CPRmeter®, iPhone app PocketCPR®) with standard BLS without feedback in a simulated scenario. 240 trained medical students performed single rescuer BLS on a manikin for 8minutes. Effective compression (compressions with correct depth, pressure point and sufficient decompression) as well as compression rate, flow time fraction and ventilation parameters were compared between the four groups.
Results Study participants using the PocketCPR® performed 17±19% effective compressions compared to 32±28% with CPRmeter®, 25±27% with the iPhone app PocketCPR®, and 35±30% applying standard BLS (PocketCPR® vs. CPRmeter® p=0.007, PocketCPR® vs. standard BLS p=0.001, others: ns). PocketCPR® and CPRmeter® prevented a decline in effective compression over time, but overall performance in the PocketCPR® group was considerably inferior to standard CPR. Compression depth and rate were within the range recommended in the guidelines in all groups.
Conclusion While we found differences between the investigated CPR feedback devices, overall BLS quality was suboptimal in all groups. Surprisingly, effective compression was not improved by any CPR feedback device compared to standard BLS. All feedback devices caused substantial delay in starting CPR, which may worsen outcome.

Les noves guies (ja no tan noves), milloren la qualitat de les compressions de les compressions en aquest estudi de simulació.

Am J Emerg Med. 2013 Oct 9. pii: S0735-6757(13)00672-4. doi: 10.1016/j.ajem.2013.09.043. [Epub ahead of print]

Quality of chest compressions during compression-only cardiopulmonary resuscitation: a comparative analysis following the 2005 and 2010 American Heart Association guidelines.

Yang Z, Li H, Yu T, Chen C, Xu J, Chu Y, Zhou T, Jiang L, Huang Z.
Source: Department of Emergency Medicine, Sun Yat-sen Memorial Hospital, Sun Yat-sen University, Guangzhou, China; Institute of Cardiopulmonary Cerebral Resuscitation, Sun Yat-sen University, Guangzhou, China. Electronic address: yangzhengfei@vip.163.com.

Abstract
OBJECTIVE: The latest guidelines both increased the requirements of chest compression rate and depth during cardiopulmonary resuscitation (CPR), which may make it more difficult for the rescuer to provide high-quality chest compression. In this study, we investigated the quality of chest compressions during compression-only CPR under the latest 2010 American Heart Association (AHA) guidelines (AHA 2010) and its effect on rescuer fatigue.
METHODS: Eighty-six undergraduate volunteers were randomly assigned to perform CPR according to the 2005 AHA guidelines (AHA 2005) or AHA 2010. After the training course and theoretical examination of basic life support, eight min of compression-only CPR performance was assessed. The quality of chest compressions including rate and depth of compression was analyzed. The rescuer fatigue was evaluated by the changes of heart rate and blood lactate, and rating of perceived exertion.
RESULTS: Thirty-nine participants in the AHA 2005 group and 42 participants in the AHA 2010 group completed the study. Significantly greater mean chest compression depth and compression rate were both achieved in the AHA 2010 group than in the AHA 2005 group. And significantly greater rescuer fatigue was observed in the AHA 2010 group. In addition, the female in the AHA 2010 group could perform the compression rate required by the guidelines, however, significantly shallower compression depth and greater rescuer fatigue were observed when compared to the male.
CONCLUSIONS: The quality of chest compressions was significantly improved following the 2010 AHA guidelines, however, it's more difficult for the rescuer to meet the guidelines due to the increased fatigue of rescuer.

RCP

A major temps de RCP pitjor pronòstic, hem de canviar alguna cosa si veiem que el pacient no recupera circulació espontània en els primers minuts???

Circulation. 2013 Nov 17. [Epub ahead of print]

Duration of Resuscitation Efforts and Functional Outcome After Out-of-Hospital Cardiac Arrest: When Should We Change to Novel Therapies?

Reynolds JC, Frisch A, Rittenberger JC, Callaway CW.
Source: Department of Emergency Medicine, University of Pittsburgh, Pittsburgh, PA.

Abstract
BACKGROUND: Functionally favorable survival remains low after out-of-hospital cardiac arrest. When initial interventions fail to achieve the return of spontaneous circulation, they are repeated with little incremental benefit. Patients without rapid return of spontaneous circulation do not typically survive with good functional outcome. Novel approaches to out-of-hospital cardiac arrest have yielded functionally favorable survival in patients for whom traditional measures had failed, but the optimal transition point from traditional measures to novel therapies is ill defined. Our objective was to estimate the dynamic probability of survival and functional recovery as a function of resuscitation effort duration to identify this transition point.
METHODS AND RESULTS: Retrospective cohort study of a cardiac arrest database at a single site. We included 1014 adult (≥18 years) patients experiencing nontraumatic out-of-hospital cardiac arrest between 2005 and 2011, defined as receiving cardiopulmonary resuscitation or defibrillation from a professional provider. We stratified by functional outcome at hospital discharge (modified Rankin scale). Survival to hospital discharge was 11%, but only 6% had a modified Rankin scale of 0

to 3. Within 16.1 minutes of cardiopulmonary resuscitation, 89.7% (95% confidence interval, 80.3%-95.8%) of patients with good functional outcome had achieved return of spontaneous circulation, and the probability of good functional recovery fell to 1%. Adjusting for prehospital and inpatient covariates, cardiopulmonary resuscitation duration (minutes) is independently associated with favorable functional status at hospital discharge (odds ratio, 0.84; 95% confidence interval, 0.72-0.98; P=0.02).
CONCLUSIONS: The probability of survival to hospital discharge with a modified Rankin scale of 0 to 3 declines rapidly with each minute of cardiopulmonary resuscitation. Novel strategies should be tested early after cardiac arrest rather than after the complete failure of traditional measures.

Sembla clar que transportar pacients sense ROSC a l'hospital és pràcticament un esforç fútil.

Crit Care. 2013 Nov 20;17(6):R274. [Epub ahead of print]
Neurological outcomes in patients transported to hospital without a prehospital return of spontaneous circulation after cardiac arrest.
Goto Y, Maeda T, Nakatsu-Goto Y.
Abstract
INTRODUCTION: As emergency medical services (EMS) personnel in Japan are not allowed to perform termination of resuscitation in the field, most patients experiencing an out-of-hospital cardiac arrest (OHCA) are transported to hospitals without a prehospital return of spontaneous circulation (ROSC). As the crucial prehospital factors for outcomes are not clear in patients who had an OHCA without a prehospital ROSC, we aimed to determine the prehospital factors associated with 1-month favorable neurological outcomes (Cerebral Performance Category scale 1 or 2 (CPC 1--2)).
METHODS: We analyzed the data of 398,121 adult OHCA patients without a prehospital ROSC from a prospectively recorded nationwide Utstein-style Japanese database from 2007 to 2010. The primary endpoint was 1-month CPC 1--2.
RESULTS: The rate of 1-month CPC 1--2 was 0.49%. Multivariate logistic regression analysis indicated that the independent variables associated with CPC 1--2 were the following nine prehospital factors: (1) initial non-asystole rhythm (ventricular fibrillation (VF): adjusted odds ratio (aOR), 9.37; 95% confidence interval (CI), 7.71 to 11.4; pulseless ventricular tachycardia (VT): aOR, 8.50; 95% CI, 5.36 to 12.9; pulseless electrical activity (PEA): aOR, 2.75; 95% CI, 2.40 to 3.15), (2) age <65 years (aOR, 3.90; 95% CI, 3.28 to 4.67), (3) arrest witnessed by EMS personnel (aOR, 2.82; 95% CI, 2.48 to 3.19), (4) call-to-hospital arrival time <24 minutes (aOR, 2.58; 95% CI, 2.22 to 3.01), (5) arrest witnessed by any layperson, (6) physician-staffed ambulance, (7) call-to-response time <5 minutes, (8) prehospital shock delivery, and (9) presumed cardiac cause. When four crucial key factors (with an aOR >2.0 in the regression model: initial non-asystole rhythm, age <65 years, EMS-witnessed arrest, and call-to-hospital arrival time <24 minutes) were present, the rates of 1-month CPC 1--2 and 1-month survival were 16.1% and 23.2% in initial VF, 8.3% and 16.7% in pulseless VT, and 3.8% and 9.4% in PEA, respectively.
CONCLUSIONS: In OHCA patients transported to hospitals without a prehospital ROSC, nine prehospital factors were significantly associated with 1-month CPC 1--2. Of those, four are crucial key factors: initial non-asystole rhythm, age <65 years, EMS-witnessed arrest, and call-to-hospital arrival time <24 minutes.

Revisió "salvatge" sobre l'ACR traumàtica

Curr Opin Crit Care. 2013 Dec;19(6):594-8. doi: 10.1097/MCC.0000000000000034.
Salvage techniques in traumatic cardiac arrest: thoracotomy, extracorporeal life support, and therapeutic hypothermia.
Tisherman SA.
Source: Departments of Critical Care Medicine and Surgery, University of Pittsburgh, Pittsburgh, Pennsylvania, USA.

Abstract
PURPOSE OF REVIEW: Survival from traumatic cardiac arrest is associated with a very high mortality despite aggressive resuscitation including an Emergency Department thoracotomy (EDT). Novel salvage techniques are needed to improve these outcomes.
RECENT FINDINGS: More aggressive out-of-hospital interventions, such as chest decompression or thoracotomy by emergency physicians or anesthesiologists, seem feasible and show some promise for improving outcomes. For trauma patients who suffer severe respiratory failure or refractory cardiac arrest, there seems to be an increasing role for the use of extracorporeal life support (ECLS), utilizing heparin-bonded systems to avoid systemic anticoagulation. The development of exposure hypothermia is associated with poor outcomes in trauma patients, but preclinical studies have consistently demonstrated that mild, therapeutic hypothermia (34 °C) improves survival from severe hemorrhagic shock. Sufficient data exist to justify a clinical trial. For patients who suffer a cardiac arrest refractory to EDT, induction of emergency preservation and resuscitation by rapid cooling to a tympanic membrane temperature of 10 °C may preserve vital organs long enough to allow surgical hemostasis, followed by resuscitation with cardiopulmonary bypass.

Un algoritme per millorar la supervivència de les ACR traumàtiques prehospitalàries

Resuscitation. 2013 Nov 25. pii: S0300-9572(13)00849-6. doi: 10.1016/j.resuscitation.2013.11.009. [Epub ahead of print]
Requirement for a structured algorithm in cardiac arrest following major trauma: Epidemiology, management errors, and preventability of traumatic deaths in Berlin.
Kleber C, Giesecke MT, Lindner T, Haas NP, Buschmann CT.
Source: Center for Musculoskeletal Surgery, AG Polytrauma, Charité-Universitätsmedizin Berlin, Augustenburger Platz 1, 13353 Berlin, Germany; Berlin-Brandenburg Center for Regenerative Therapies, Charité-Universitätsmedizin, Berlin, Augustenburger Platz 1, 13353 Berlin, Germany. Electronic address: christian.kleber@charite.de.
Abstract
BACKGROUND: Despite continuous innovation in trauma care, fatal trauma remains a significant medical and socioeconomic problem. Traumatic cardiac arrest (tCA) is still considered a hopeless situation, whereas management errors and preventability of death are neglected. We analyzed clinical and autopsy data from tCA patients in an emergency-physician-based rescue system in order to reveal epidemiologic data and current problems in the successful treatment of tCA.
MATERIAL AND METHODS: Epidemiological and autopsy data of all unsuccessful tCPR cases in a one-year-period in Berlin, Germany (n = 101, Group I) and clinical data of all cases of tCPR in a level 1 trauma centre in an 6-year period (n= 52, Group II) were evaluated. Preventability of traumatic deaths in autopsy cases (n = 22) and trauma-management failures were prospectively assessed. Results: In 2010, 23% of all traumatic deaths in Berlin received tCPR. Death after tCPR occurred predominantly prehospital (PH;74%) and only 26% of these patients were hospitalized. Of 52 patients (Group II), 46% required tCPR already PH and 81% in the emergency department (ED). In 79% ROSC was established PH and 53% in the ED. The survival rate after tCPR was 29% with 27% good neurological outcome. Management errors occurred in 73% PH; 4 cases were judged as potentially or definitive preventable death.
CONCLUSION: Trauma CPR is beyond routine with the need for a tCPR-algorithm, including chest/pericardial decompression, external pelvic stabilization and external bleeding control. The prehospital trauma management has the highest potential to improve tCPR and survival. Therefore, we suggested a pilot prehospital tCPR-algorithm.

COMPRESSORS TORÀCICS MECÀNICS

LINC TRIAL (el mega-assaig clínic fet amb el LUCAS): *Assaig clínic amb 2500 pacients comparant l'us del LUCAS amb DF mentre es realitzen les compressions amb un algoritme una mica modificat*

vs la RCP stàndard. Els resultats no mostren una milloria en la supervivència tot i una tendència a un millor pronòstic.

JAMA Published online November 17, 2013 (descàrrega gratis a la web de JAMA)
Mechanical Chest Compressions and Simultaneous Defibrillation vs Conventional Cardiopulmonary Resuscitation in Out-of-Hospital Cardiac Arrest The LINC Randomized Trial
Sten Rubertsson, MD, PhD; Erik Lindgren, MD; David Smekal, MD, PhD; Ollie Östlund, PhD; Johan Silfverstolpe, MD; Robert A. Lichtveld, MD, PhD; Rene Boomars, MPA; Björn Ahlstedt, MD; Gunnar Skoog, MD; Robert Kastberg, MD; David Halliwell, RN; Martyn Box, RN; Johan Herlitz, MD, PhD; Rolf Karlsten, MD, PhD ABSTRACT IMPORTANCE A strategy using mechanical chest compressions might improve the poor outcome in out-of-hospital cardiac arrest, but such a strategy has not been tested in large clinical trials.
OBJECTIVE To determine whether administering mechanical chest compressions with defibrillation during ongoing compressions (mechanical CPR), compared with manual cardiopulmonary resuscitation (manual CPR), according to guidelines, would improve 4-hour survival.
DESIGN, SETTING, AND PARTICIPANTS Multicenter randomized clinical trial of 2589 patients with out-of-hospital cardiac arrest conducted between January 2008 and February 2013 in 4 Swedish, 1 British, and 1 Dutch ambulance services and their referring hospitals. Duration of follow-up was 6 months.
INTERVENTIONS Patients were randomized to receive either mechanical chest compressions (LUCAS Chest Compression System, Physio-Control/Jolife AB) combined with defibrillation during ongoing compressions (n = 1300) or to manual CPR according to guidelines (n = 1289).
MAIN OUTCOMES AND MEASURES Four-hour survival, with secondary end points of survival up to 6 months with good neurological outcome using the Cerebral Performance Category (CPC) score. A CPC score of 1 or 2 was classified as a good outcome.
RESULTS Four-hour survival was achieved in 307 patients (23.6%) with mechanical CPR and 305 (23.7%) with manual CPR (risk difference, –0.05%; 95%CI, –3.3%to 3.2%; P > .99). Survival with a CPC score of 1 or 2 occurred in 98 (7.5%) vs 82 (6.4%) (risk difference, 1.18%; 95%CI, –0.78%to 3.1%) at intensive care unit discharge, in 108 (8.3%) vs 100 (7.8%) (risk difference, 0.55%; 95%CI, –1.5%to 2.6%) at hospital discharge, in 105 (8.1%) vs 94 (7.3%) (risk difference, 0.78%; 95%CI, –1.3%to 2.8%) at 1 month, and in 110 (8.5%) vs 98 (7.6%) (risk difference, 0.86%; 95%CI, –1.2%to 3.0%) at 6 months with mechanical CPR and manual CPR, respectively. Among patients surviving at 6 months, 99%in the mechanical CPR group and 94%in the manual CPR group had CPC scores of 1 or 2.
CONCLUSIONS AND RELEVANCE Among adults with out-of-hospital cardiac arrest, there was no significant difference in 4-hour survival between patients treated with the mechanical CPR algorithm or those treated with guideline-adherent manual CPR. The vast majority of survivors in both groups had good neurological outcomes by 6 months. In clinical practice, mechanical CPR using the presented algorithm did not result in improved effectiveness compared with manual CPR.

FÀRMACS

Donem massa adrenalina???

Resuscitation. 2013 Nov 16. pii: S0300-9572(13)00798-3. doi: 10.1016/j.resuscitation.2013.10.004. [Epub ahead of print]
Adrenaline (Epinephrine) Dosing Period and Survival after In-Hospital Cardiac Arrest: A Retrospective Review of Prospectively Collected Data.
Warren SA, Huszti E, Bradley SM, Chan PS, Bryson CL, Fitzpatrick AL, Nichol G.
Source: University of Washington-Harborview Center for Prehospital Emergency Care, Seattle WA; Department of Medicine, Seattle WA; Department of Epidemiology, Seattle WA. Electronic address: sawarren@u.washington.edu.
Abstract

Background and aim: Expert guidelines for treatment of cardiac arrest recommend administration of adrenaline(epinephrine) every three to five minutes. However, the effects of different dosing periods of epinephrine remain unclear. We sought to evaluate the association between epinephrine average dosing period and survival to hospital discharge in adults with an in-hospital cardiac arrest (IHCA). Methods We performed a retrospective review of prospectively collected data on 20,909 IHCA events from 505 hospitals participating in the Get With The Guidelines-Resuscitation (GWTG-R) quality improvement registry. Epinephrine average dosing period was defined as the time between the first epinephrine dose and the resuscitation endpoint, divided by the total number of epinephrine doses received subsequent to the first epinephrine dose. Associations with survival to hospital discharge were assessed by using generalized estimating equations to construct multivariable logistic regression models. Results Compared to a referent epinephrine average dosing period of 4 to <5minutes per dose, survival to hospital discharge was significantly higher in patients with the following epinephrine average dosing periods: for 6 to <7min/dose, adjusted odds ratio [OR], 1.41 (95% CI: 1.12, 1.78); for 7 to <8min/dose, adjusted OR, 1.30 (95%CI: 1.02, 1.65); for 8 to <9min/dose, adjusted OR, 1.79 (95%CI: 1.38, 2.32); for 9 to <10min/dose, adjusted OR, 2.17 (95%CI: 1.62, 2.92). This pattern was consistent for both shockable and non-shockable cardiac arrest rhythms. Conclusion Less frequent average epinephrine dosing than recommended by consensus guidelines was associated with improved survival of in-hospital cardiac arrest.

HIPOTÈRMIA (hi han articles molt interessants)

En aquest estudi no semblen trobar diferències sobre el pronòstic dels pacients amb ACR en ritmes no desfibril·lables independentment de si han estat sotmesos a hipotèrmia o no.

Intensive Care Med. 2013 May;39(5):826-37. doi: 10.1007/s00134-013-2868-1. Epub 2013 Feb 16.
Therapeutic hypothermia after out-of-hospital cardiac arrest in Finnish intensive care units: the FINNRESUSCI study.
Vaahersalo J, Hiltunen P, Tiainen M, Oksanen T, Kaukonen KM, Kurola J, Ruokonen E, Tenhunen J, Ala-Kokko T, Lund V, Reinikainen M, Kiviniemi O, Silfvast T, Kuisma M, Varpula T, Pettilä V; FINNRESUSCI Study Group.
Collaborators (65)
Source: Department of Surgery, Intensive Care Units, Helsinki University Hospital, Helsinki, Finland. jukka.vaahersalo@hus.fi Abstract
PURPOSE: We aimed to evaluate post-resuscitation care, implementation of therapeutic hypothermia (TH) and outcomes of intensive care unit (ICU)-treated out-of-hospital cardiac arrest (OHCA) patients in Finland.
METHODS: We included all adult OHCA patients admitted to 21 ICUs in Finland from March 1, 2010 to February 28, 2011 in this prospective observational study. Patients were followed (mortality and neurological outcome evaluated by Cerebral Performance Categories, CPC) within 1 year after cardiac arrest.
RESULTS: This study included 548 patients treated after OHCA. Of those, 311 patients (56.8%) had a shockable initial rhythm (incidence of 7.4/100,000/year) and 237 patients (43.2%) had a non-shockable rhythm (incidence of 5.6/100,000/year). At ICU admission, 504 (92%) patients were unconscious. TH was given to 241/281 (85.8%) unconscious patients resuscitated from shockable rhythms, with unfavourable 1-year neurological outcome (CPC 3-4-5) in 42.0% with TH versus 77.5% without TH ($p < 0.001$). TH was given to 70/223 (31.4%) unconscious patients resuscitated from non-shockable rhythms, with 1-year CPC of 3-4-5 in 80.6% (54/70) with TH versus 84.0% (126/153) without TH ($p = 0.56$). This lack of difference remained after adjustment for propensity to receive TH in patients with non-shockable rhythms.
CONCLUSIONS: One-year unfavourable neurological outcome of patients with shockable rhythms after TH was lower than in previous randomized controlled trials. However, our results do not support use of TH in patients with non-shockable rhythms

La hipotèrmia prehospitalària amb sèrum fred no sembla que millori el pronòstic dels pacients segons aquest assaig clínic…

JAMA Published online November 17, 2013 (Free for download at JAMA)

Effect of Prehospital Induction of Mild Hypothermiaon Survival and Neurological Status Among Adults With Cardiac Arrest A Randomized Clinical Trial

Francis Kim, MD; Graham Nichol, MD, MPH; CharlesMaynard, PhD; Al Hallstrom, PhD; Peter J. Kudenchuk, MD; Thomas Rea, MD, MPH; Michael K. Copass, MD; David Carlbom, MD; Steven Deem, MD;W. T. Longstreth Jr, MD; Michele Olsufka, RN; Leonard A. Cobb,MD

ABSTRACT

IMPORTANCE Hospital cooling improves outcome after cardiac arrest, but prehospital cooling immediately after return of spontaneous circulation may result in better outcomes. OBJECTIVE To determine whether prehospital cooling improves outcomes after resuscitation from cardiac arrest in patients with ventricular fibrillation (VF) and without VF.

DESIGN, SETTING, AND PARTICIPANTS A randomized clinical trial that assigned adults with prehospital cardiac arrest to standard care with or without prehospital cooling, accomplished by infusing up to 2 L of 4°C normal saline as soon as possible following return of spontaneous circulation. Adults in King County,Washington, with prehospital cardiac arrest and resuscitated by paramedics were eligible and 1359 patients (583 with VF and 776 without VF) were randomized between December 15, 2007, and December 7, 2012. Patient follow-up was completed by May 1, 2013. Nearly all of the patients resuscitated from VF and admitted to the hospital received hospital cooling regardless of their randomization.

MAIN OUTCOMES AND MEASURES The primary outcomeswere survival to hospital discharge and neurological status at discharge.

RESULTS The intervention decreased mean core temperature by 1.20°C (95%CI, −1.33°C to −1.07°C) in patients with VF and by 1.30°C (95%CI, −1.40°C to −1.20°C) in patients without VF by hospital arrival and reduced the time to achieve a temperature of less than 34°C by about 1 hour compared with the control group. However, survival to hospital discharge was similar among the intervention and control groups among patients with VF (62.7%[95%CI, 57.0%-68.0%] vs 64.3%[95%CI, 58.6%-69.5%], respectively; P = .69) and among patients without VF (19.2%[95%CI, 15.6%-23.4%] vs 16.3%[95%CI, 12.9%-20.4%], respectively; P = .30). The intervention was also not associated with improved neurological status of full recovery or mild impairment at discharge for either patients with VF (57.5%[95%CI, 51.8%-63.1%] of cases had full recovery or mild impairment vs 61.9%[95%CI, 56.2%-67.2%] of controls; P = .69) or those without VF (14.4%[95%CI, 11.3%-18.2%] of cases vs 13.4% [95%CI,10.4%-17.2%] of controls; P = .30). Overall, the intervention group experienced rearrest in the field more than the control group (26%[95%CI, 22%-29%] vs 21% [95%CI, 18%-24%], respectively; P = .008), as well as increased diuretic use and pulmonary edema on first chest x-ray, which resolved within 24 hours after admission.

CONCLUSION AND RELEVANCE Although use of prehospital cooling reduced core temperature by hospital arrival and reduced the time to reach a temperature of 34°C, it did not improve survival or neurological status among patients resuscitated from prehospital VF or those without VF.

TRIAL REGISTRATION clinicaltrials.gov Identifier: NCT00391469.

Potser el que realment és bo és evitar la febre i no la hipotèrmia en si mateixa!

New England Journal of Medicine nejm.org on November 17, 2013. (Descàrrega gratis a la web del NEJM)

Targeted Temperature Management at 33°C versus 36°C after Cardiac Arrest

Niklas Nielsen, M.D., Ph.D., Jørn Wetterslev, M.D., Ph.D., Tobias Cronberg, M.D., Ph.D., David Erlinge, M.D., Ph.D., Yvan Gasche, M.D., Christian Hassager, M.D., D.M.Sci., Janneke Horn, M.D., Ph.D., Jan Hovdenes, M.D., Ph.D., Jesper Kjaergaard, M.D., D.M.Sci., Michael Kuiper, M.D., Ph.D., Tommaso Pellis, M.D., Pascal Stammet, M.D., Michael Wanscher, M.D., Ph.D., Matt P. Wise, M.D.,

D.Phil., Anders Åneman, M.D., Ph.D., Nawaf Al-Subaie, M.D., Søren Boesgaard, M.D., D.M.Sci., John Bro-Jeppesen, M.D., Iole Brunetti, M.D., Jan Frederik Bugge, M.D., Ph.D., Christopher D. Hingston, M.D., Nicole P. Juffermans, M.D., Ph.D., Matty Koopmans, R.N., M.Sc., Lars Køber, M.D., D.M.Sci., Jørund Langørgen, M.D., Gisela Lilja, O.T., Jacob Eifer Møller, M.D., D.M.Sci., Malin Rundgren, M.D., Ph.D., Christian Rylander, M.D., Ph.D., Ondrej Smid, M.D., Christophe Werer, M.D., Per Winkel, M.D., D.M.Sci., and Hans Friberg, M.D., Ph.D., ABSTRACT

Background: Unconscious survivors of out-of-hospital cardiac arrest have a high risk of death or poor neurologic function. Therapeutic hypothermia is recommended by international guidelines, but the supporting evidence is limited, and the target temperature associated with the best outcome is unknown. Our objective was to compare two target temperatures, both intended to prevent fever.

Methods: In an international trial, we randomly assigned 950 unconscious adults after out-of hospital cardiac arrest of presumed cardiac cause to targeted temperature management at either 33°C or 36°C. The primary outcome was all-cause mortality through the end of the trial. Secondary outcomes included a composite of poor neurologic function or death at 180 days, as evaluated with the Cerebral Performance Category (CPC) scale and the modified Rankin scale.

Results: In total, 939 patients were included in the primary analysis. At the end of the trial, 50% of the patients in the 33°C group (235 of 473 patients) had died, as compared with 48% of the patients in the 36°C group (225 of 466 patients) (hazard ratio with a temperature of 33°C, 1.06; 95% confidence interval [CI], 0.89 to 1.28; P = 0.51). At the 180-day follow-up, 54% of the patients in the 33°C group had died or had poor neurologic function according to the CPC, as compared with 52% of patients in the 36°C group (risk ratio, 1.02; 95% CI, 0.88 to 1.16; P = 0.78). In the analysis using the modified Rankin scale, the comparable rate was 52% in both groups (risk ratio, 1.01; 95% CI, 0.89 to 1.14; P = 0.87). The results of analyses adjusted for known prognostic factors were similar.

Conclusions: In unconscious survivors of out-of-hospital cardiac arrest of presumed cardiac cause, hypothermia at a targeted temperature of 33°C did not confer a benefit as compared with a targeted temperature of 36°C. (Funded by the Swedish Heart–Lung Foundation and others; TTM ClinicalTrials.gov number, NCT01020916.).

El protocol de l'estudi PRINCESS, hipotèrmia intra parada mitjançant el Rino-Chill (gas fred pel nas)

BMC Emerg Med. 2013 Nov 25;13(1):21. doi: 10.1186/1471-227X-13-21.

Design of the PRINCESS trial: pre-hospital resuscitation intra-nasal cooling effectiveness survival study (PRINCESS).

Nordberg P, Taccone FS, Castren M, Truhlár A, Desruelles D, Forsberg S, Hollenberg J, Vincent JL, Svensoon L.

Source: Department of Intensive Care, Hopital Erasme, Université Libre de Bruxelles (ULB), Route de Lennik, 808, Bruxelles 1070, Belgium. ftaccone@ulb.ac.be.

Abstract

BACKGROUND: Therapeutic hypothermia (TH, 32-34°C) has been shown to improve neurological outcome in comatose survivors of out-of-hospital cardiac arrest (OHCA) with ventricular tachycardia or fibrillation. Earlier initiation of TH may increase the beneficial effects. Experimental studies have suggested that starting TH during cardiopulmonary resuscitation (CPR) may further enhance its neuroprotective effects. The aim of this study was to evaluate whether intra-arrest TH (IATH), initiated in the field with trans nasal evaporative cooling (TNEC), would provide outcome benefits when compared to standard of care in patients being resuscitated from OHCA.

METHODS/DESIGN: We describe the methodology of a multi-centre, randomized, controlled trial comparing IATH delivered through TNEC device (Rhinochill, Benechill Inc., San Diego, CA, USA) during CPR to standard treatment, including TH initiated after hospital admission. The primary outcome is neurological intact survival defined as cerebral performance category 1-2 at 90 days among those patients who are admitted to the hospital. Secondary outcomes include survival at 90 days, proportion of patients achieving a return to spontaneous circulation (ROSC), the proportion

of patients admitted alive to the hospital and the proportion of patients achieving target temperature (<34°C) within the first 4 hours since CA.
DISCUSSION: This ongoing trial will assess the impact of IATH with TNEC, which may be able to rapidly induce brain cooling and have fewer side effects than other methods, such as cold fluid infusion. If this intervention is found to improve neurological outcome, its early use in the pre-hospital setting will be considered as an early neuro-protective strategy in OHCA.

Aquest article demostra el que sembla evident, que a més massa més temps per refredar. Si més no, el pronòstic no canvia.

Resuscitation. 2013 Nov 11. pii: S0300-9572(13)00834-4. doi: 10.1016/j.resuscitation.2013.10.027. [Epub ahead of print]
The association of Body Mass Index with time to target temperature and outcomes following post-arrest targeted temperature management.
Leary M, Cinousis M, Mikkelsen ME, Gaieski DF, Abella BS, Fuchs BD.
Source: Center for Resuscitation Science and Department of Emergency Medicine, Department of Emergency Medicine. Electronic address: marion.leary@uphs.upenn.edu.
Abstract
BACKGROUND: Evidence suggests that more rapid attainment of target temperature (32-34oC) improves neurologic outcome following cardiac arrest and targeted temperature management (TTM). It is unclear to what extent Body Mass Index (BMI) is associated with the time to reach target temperature and subsequent clinical outcomes.
OBJECTIVE: We sought to determine whether the time to target temperature was affected by BMI. In addition, we wished to determine whether the incidence of skin breakdown, survival to discharge and neurologic outcomes were associated with BMI.
METHODS:
Multicenter retrospective cohort study of cardiac arrest patients who underwent TTM between 7/2007 and 12/2012. We examined the association between BMI and the time from initiation of cooling to attainment of target temperature (32-34C).
RESULTS: Of 236 patients treated with TTM, 184 were included in the study. Mean age was 57.8±17.0 years; 78/184 (42%) were female and 48/184 (25%) had VF/VT as the initial rhythm. Median time to reach target temperature from ROSC was 6.4 (4.1, 9.8) and median time from initiation of TTM to target temperature was 3.4 (2.1, 5.8). Cooling duration was a median of 24.0 (23.0, 24.0) hours and median rewarming time was 12.0 (9.5, 18.0) hours. Overall, 104/184 (56.5%) achieved target temperature within 4hrs and 128/184 (69.6%) within 6hrs. Increased BMI was associated with a longer time to achieve target temperature from initiation of TTM (p=0.01). There was no significant difference across BMI groups in time to achieve target temperature from ROSC (0.07), skin breakdown (p=0.35), survival (p=0.21), nor rate of good neurologic outcome (p=0.32).
CONCLUSIONS: Target temperature was frequently achieved within 4-6hrs; as BMI increased, the time to reach target temperature from initiation of TTM was prolonged. There was no significant difference across BMI groups for survival or good neurologic outcome.

Article sobre el temps de recuperació post-hipotèrmia terapèutica. El títol és prou clar.

Resuscitation. 2013 Nov 11. pii: S0300-9572(13)00837-X. doi: 10.1016/j.resuscitation.2013.10.030. [Epub ahead of print]
Awakening after cardiac arrest and post resuscitation hypothermia: Are we pulling the plug too early?
Gold B, Puertas L, Davis SP, Metzger A, Yannopoulos D, Oakes DA, Lick CJ, Gillquist DL, Holm SY, Olsen JD, Jain S, Lurie KG.
Source: Department of Anesthesiology, Universersity of Minnesota. Electronic address: GoldX002@umn.edu.

Abstract
Background: Time to awakening after out-of-hospital cardiac arrest (OHCA) and post-resuscitation therapeutic hypothermia (TH) varies widely. We examined the time interval from when comatose OHCA patients were rewarmed to 37 °C to when they showed definitive signs of neurological recovery and tried to identify potential predictors of awakening. Methods: With IRB approval, a retrospective case study was performed in OHCA patients who were comatose upon presentation to a community hospital during 2006–2010. They were treated with TH (target of 33 °C) for 24 h, rewarmed, and discharged alive. Comatose patients were generally treated medically after TH for at least 48 h before any decision to withdraw supportive care was made. Pre-hospital TH was not used. Data are expressed as medians and interquartile range. Results: The 89 patients treated with TH in this analysis were divided into three groups based upon the time between rewarming to 37 °C and regaining consciousness. The 69 patients that regained consciousness in ≤48 h after rewarming were termed “early-awakeners”. Ten patients regained consciousness 48–72 h after rewarming and were termed “intermediate-awakeners”. Ten patients remained comatose and apneic >72 h after rewarming but eventually regained consciousness; they were termed “late-awakeners”. The ages for the early, intermediate and late awakeners were 56 [49,65], 62 [48,74], and 58 [55,65] years, respectively. Nearly 67% were male. Following rewarming, the time required to regain consciousness for the early, intermediate and late awakeners was 9 [2,18] (range 0–47), 60.5 [56,64.5] (range 49–71), and 126 [104,151] h (range 73–259), respectively. Within 90 days of hospital admission, favorable neurological function based on a Cerebral Performance Category (CPC) score of 1 or 2 was reported in 67/69 early, 10/10 intermediate, and 8/10 late awakeners. Conclusion: Following OHCA and TH, arbitrary withdrawal of life support <48 h after rewarming may prematurely terminate life in many patients with the potential for full neurological recovery. Additional clinical markers that correlate with late awakening are needed to better determine when withdrawal of support is appropriate in OHCA patients who remain comatose >48 h after rewarming.

Sobre els efectes adversos de la hipotèrmia

Ann Pharmacother. 2013 Nov 6. [Epub ahead of print]
Assessment of Adverse Events and Predictors of Neurological Recovery After Therapeutic Hypothermia.
Maclaren R, Gallagher J, Shin J, Varnado S, Nguyen L.
Source: University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Aurora, CO, USA.
Abstract
BACKGROUND: Therapeutic hypothermia improves neurological recovery after witnessed cardiac arrest from ventricular fibrillation or tachycardia. Its application is expanding despite associated adverse events.
OBJECTIVE: To assess the occurrence of adverse events and predictors of good versus poor neurological recovery after therapeutic hypothermia.
METHODS: A single-center, retrospective chart audit of 91 patients who received therapeutic hypothermia for ≥6 hours. Adverse events included laboratory abnormalities, shivering, acute kidney injury, or infection. Cerebral performance categories (CPC) scores delineated good (CPC of 1-3) or poor (CPC of 4 or 5) neurological outcomes. Groups were compared and parameters evaluated for effect on neurological recovery using backward logistic regression analysis.
RESULTS: Therapeutic hypothermia was used for several indications, and 42 patients (46.2%) had good neurological recovery. Demographic parameters were similar between groups. Common adverse events were hypoglycemia (98.9%), shivering (84.6%), bradycardia (58.2%), electrolyte abnormalities (26.4%-91.2%), acute kidney injury (52.8%), infection (48.4%), and coagulopathy (40.7%). Characteristics independently associated with neurological recovery included faster return of spontaneous circulation (ROSC), quicker initiation of cooling, and the occurrence of infections.

Pulseless electrical activity, faster achievement of goal cooling temperature, seizure, and the administration of insulin or epinephrine were inversely related to neurological recovery.
CONCLUSIONS: Adverse events of therapeutic hypothermia were numerous and frequent, necessitating monitoring. Neurological recovery is primarily driven by the type of arrest, the rapidity of ROSC, the time needed to provide and achieve therapeutic hypothermia, the development of seizures or infection, and the use of insulin or epinephrine

Factors que s'associen a l'aparició d'una pneumònia en pacients sotmesos a hipotèrmia terapèutica

Am J Emerg Med. 2013 Oct 26. pii: S0735-6757(13)00707-9. doi: 10.1016/j.ajem.2013.10.035. [Epub ahead of print]
Factors associated with pneumonia in post-cardiac arrest patients receiving therapeutic hypothermia.
Woo JH, Lim YS, Yang HJ, Park WB, Cho JS, Kim JJ, Hyun SY, Lee G.
Source: Department of Emergency Medicine, Gachon University Gil Medical Center, 1198, Guwol-dong, Namdong-gu, Incheon, 405-760, South Korea.
Abstract
AIM: The aim of this study is to investigate risk factors associated with the development of pneumonia during the first 7 days of admission in survivors of cardiac arrest receiving therapeutic hypothermia.
METHODS: A total of 123 patients receiving therapeutic hypothermia after out-of-hospital cardiac arrest between January 2008 and December 2010 were enrolled. Study populations were categorized as "pneumonia present" [P (+)] and "pneumonia absent" [P (-)] contingent upon the development of pneumonia during the first 7 days of admission. Risk factors and outcomes related to development of pneumonia were determined.
RESULTS: Fifty-nine patients (48.0 %) developed pneumonia, and P (+) patients had lower Acute Physiology and Chronic Health Evaluation II score (22 vs 26); longer durations of central venous catheter (8.9 vs 5.1 days), nasogastric tube (11.1 vs 3.8 days), mechanical ventilation (MV) (9.3 vs 3.7 days), and intensive care unit stay (10.0 vs 5.0 days); and higher rates of nasogastric feeding (66.1% vs 35.9 %), tracheostomy (52.5% vs 17.2 %), and postanoxic seizure (62.7% vs 39.1 %). In multivariate analyses, the occurrence of postanoxic seizure (odds ratio, 2.75; 95% confidence interval, 1.06-7.14; P = .04) and the length of MV (odds ratio, 1.33; 95% confidence interval, 1.15-1.52; P < .001) were independently associated with the development of pneumonia. The development of pneumonia had no significant association with survival (log-rank test, P = .15).
CONCLUSION: Postanoxic seizure and prolonged duration of MV are independently associated with development of pneumonia. It may be helpful that we give more attention to the development of pneumonia in patients with postanoxic seizure and provide prompt diagnosis and treatment of postanoxic seizure.

REGISTRES

La mort sobtada a l'esport és molt menys freqüent a les dones i sembla tenir un molt millor pronòstic

Circ Arrhythm Electrophysiol. 2013 Nov 4. [Epub ahead of print]
Characteristics and Outcome of Sudden Cardiac Arrest during Sports in Women.
Marijon E, Bougouin W, Celermajer DS, Périer MC, Dumas F, Benameur N, Karam N, Lamhaut L, Tafflet M, Mustafic H, Machado de Deus N, Le Heuzey JY, Desnos M, Avillach P, Spaulding C, Cariou A, Prugger C, Empana JP, Jouven X.
Source: 1Paris Cardiovascular Research Center, INSERM Unit 970 & Paris Descartes University & Cardiology Department, European Georges Pompidou Hospital & Sudden Death Expertise Center, Paris, France.
Abstract

BACKGROUND: -No specific data are available on characteristics and outcome of sudden cardiac death (SCD) during sport activities among women in the general population.
METHODS AND RESULTS: -From a prospective 5-year national survey, involving 820 subjects aged 10-75 years who presented with SCD (resuscitated or not) during competitive or recreational sport activities, 43 (5.2%) such events occurred in women, principally during jogging, cycling and swimming. The level of activity at the time of SCD was moderate to vigorous in 35 cases (81.4%). The overall incidence of sport-related SCD, among 15-75 year women, was estimated as 0.59 (95%CI 0.39 to 0.79) to 2.17 (95%CI 1.38 to 2.96) per year per million female sports participants for the 80th and 20th percentiles of reporting districts, respectively. Compared to men, the incidence of SCD in women was dramatically lower, particularly in the 45-54 year range (relative risk 0.033, 95%CI 0.015 to 0.075). Despite very similar circumstances of occurrence, survival at hospital admission (46.6%, 95%CI 31.0 to 60.0) was significantly higher than for men (30.0%, 95% 26.8-33.2, P=0.02), although this did not reach statistical significance for hospital discharge. Favorable neurological outcomes were similar (80%). Cause-of-death appeared less likely to be associated with structural heart disease in women, compared to men (58.3% vs. 95.8%, P=0.0003).
CONCLUSIONS: -Sports-related SCD in women participants appears dramatically less common (up to 30-fold less frequent), compared to men. Our results also suggest a higher likelihood of successful resuscitation as well as less frequency of structural heart disease in women, compared to men.

El temps de ressuscitació a "l'escena" de l'ACR s'associa amb diferents pronòstics. Sembla que els millors resultats es donen en aquells pacients en que el temps és inferior a 16 minuts. Ull que hi ha truco, els pacients que presenten ROSC abans tenen millor pronòstic que aquells que presenten ROSC més tardíament!

Resuscitation. 2013 Oct 31. pii: S0300-9572(13)00824-1. doi: 10.1016/j.resuscitation.2013.10.021. [Epub ahead of print]

Association between resuscitation time interval at the scene and neurological outcome after out-of-hospital cardiac arrest in two Asian cities.

Shin SD, Kitamura T, Hwang SS, Kajino K, Song KJ, Ro YS, Nishiuchi T, Iwami T.
Source: Department of Emergency Medicine, Seoul National University College of Medicine, Seoul, 101 Daehak-Ro, Jongno-Gu, Seoul 110-744, Korea.

Abstract
BACKGROUND: It is unclear whether the scene time interval (STI) for cardiopulmonary resuscitation (CPR) is associated with outcomes of out-of-hospital cardiac arrest (OHCA) or not.
METHODS: A retrospective analysis based on two large population-based cohorts was performed for witnessed adult OHCA with presumed cardiac etiology from Seoul (2008-2010) and Osaka (2007-2009). The STI defined as time from wheel arrival at the scene to departure to hospital was categorized by short (less than 8minutes), intermediate (8 to less than 16minute), and long (16min or longer) STI on the basis of sensitivity analysis. Primary outcome was good neurological outcome (cerebral performance category 1 or 2). Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were calculated to determine the association between STIs and outcomes comparing with the short STI group adjusting for potential risk factors and interaction products.
RESULTS: Total 7,757 patients; 3,594 from Seoul and 4,163 from Osaka were finally analyzed. There were significant differences among STI groups for most potential risk variables. Survival to admission was higher in the intermediate STI group (35.7%) than in the short (31.8%) or long STI group (32.6%), respectively (p=0.004). Survival to discharge was not different among groups (13.7%, 13.1%, 11.5%), respectively (p=0.094). The intermediate STI group had a significantly better neurological outcome compared with the short STI group (7.7% vs. 4.6%; AOR, 1.32; 95% CI, 1.03-1.71), while the long STI (6.6%) did not.
CONCLUSION: Data from two metropolitan cities demonstrated a positive association between intermediate STI from 8 to 16minutes and good neurological outcome after OHCA

ESTUDIS EXPERIMENTALS

A veure si el que guanyem per una banda amb la Amiodarona ho perdem per una altra…

J Interferon Cytokine Res. 2013 Jun;33(6):292-6. doi: 10.1089/jir.2012.0123. Epub 2013 May 9.
Administration of amiodarone during resuscitation is associated with higher tumor necrosis factor-α levels in the early postarrest period in the swine model of ischemic ventricular fibrillation.
Youngquist ST, Niemann JT, Shah AP, Thomas JL, Rosborough JP.
Source: Division of Emergency Medicine, Department of Surgery, The University of Utah, Salt Lake City, Utah 84132, USA. scott.youngquist@utah.edu
Abstract To compare the early postarrest inflammatory cytokine response between animals administered amiodarone (AMIO) and lidocaine (LIDO) intra-arrest during resuscitation from ventricular fibrillation (VF). Domestic swine (n=32) were placed under general anesthesia and instrumented before spontaneous VF was induced by balloon occlusion of the left anterior descending coronary artery. After 7 min of VF, standard ACLS resuscitation was performed and animals were randomized to either bolus AMIO (5 mg/kg, n=13) or LIDO (1 mg/kg, n=14) for recurrent or refractory VF. A non-antiarrhythmic (n=5) was also used for comparison. Following return of spontaneous circulation (ROSC), tumor necrosis factor (TNF)-α levels were drawn at 30 and 60 min. Groups were comparable with respect to prearrest hemodynamics and resuscitation variables. In the postarrest period, the LIDO and non-antiarrhythmic group demonstrated virtually identical TNF-α response trajectories. However, TNF-α levels were significantly higher in AMIO- than LIDO-treated animals at 30 min (geometric mean 539 versus 240 pg/mL, 2.2-fold higher, 95% confidence interval [CI] 1.3-3.8-fold higher, P=0.003) and at 60 min (geometric mean 570 versus 204 pg/mL, 2.8-fold higher, 95% CI 1.1-7.0-fold higher, P=0.03). Significant differences in the postarrest TNF-α levels were observed between animals treated with AMIO as compared to those treated with LIDO. Improved rates of ROSC seen with AMIO may come at the expense of a heightened proinflammatory state in the postcardiac arrest period.

I si l'amiodarona potser no va tan bé, de la dronaderona ni parlem…

J Cardiovasc Pharmacol. 2013 May;61(5):385-90. doi: 10.1097/FJC.0b013e3182868750.
Dronedarone and Captisol-enabled amiodarone in an experimental cardiac arrest.
Glover BM, Hu X, Aves T, Ramadeen A, Zou L, Leong-Poi H, Fujii H, Dorian P.
Source: Keenan Research Centre in the Li Ka Shing Knowledge Institute of St Michael's Hospital, Toronto, Ontario, Canada.
Abstract
OBJECTIVE: To compare the energy required for defibrillation and postshock outcomes after the administration of dronedarone, amiodarone, and placebo in a porcine model of cardiac arrest.
METHODS: Forty-two pigs were randomized to amiodarone, dronedarone, or control treatments. After induction of ventricular fibrillation, compressions and ventilations were performed for 3 minutes and treatment was administered over 30 seconds. If defibrillation was unsuccessful, cardiopulmonary resuscitation continued and repeated shocks were administered every 2 minutes with continual hemodynamic monitoring for a total duration of 30 minutes.
RESULTS: The cumulative energy required for defibrillation was 570 ± 422 J for dronedarone, 441 ± 365 J for amiodarone, and 347 ± 281 J for control (P = not significant). Survival at 30 minutes was 1 (7.1%) for dronedarone compared with 11 (78.6%) for control (P = 0.001). Mortality in the dronedarone group was because of refibrillation in 3 (21.4%) cases, atrioventricular block in 1 (7.1%) case, and hypotension not because of bradycardia in 9 (64.3%) cases. Two minutes after successful defibrillation, systolic aortic pressure was lower in dronedarone versus control (86.6 ± 26.9 vs. 110 ± 15.1 mm Hg; P = 0.035).
CONCLUSIONS: The administration of dronedarone resulted in a significant reduction in survival and both systolic aortic and coronary perfusion pressure compared with control.

En aquest model porcí, el glucagó juntament amb l'adrena, millora la supervivència

Am J Emerg Med. 2013 Oct 17. pii: S0735-6757(13)00701-8. doi: 10.1016/j.ajem.2013.10.030. [Epub ahead of print]

Addition of glucagon to adrenaline improves hemodynamics in a porcine model of prolonged ventricular fibrillation.

Raffay V, Chalkias A, Lelovas P, Karlis G, Koutsovasilis A, Papalois A, Jevdjic J, Fiser Z, Xanthos T.
Source: Emergency Medicine, Municipal Institute for Emergency Medicine Novi Sad, Novi Sad, AP Vojvodina, Serbia.

Abstract

OBJECTIVE: Cardiac arrest is a daunting medical emergency. The aim of the present study was to assess whether the combination of adrenaline and glucagon would improve initial resuscitation success, 48-hour survival, and neurologic outcome compared with adrenaline alone in a porcine model of ventricular fibrillation.

METHODS: Ventricular fibrillation was induced in 20 healthy Landrace/Large White piglets, which were subsequently left untreated for 8 minutes. The animals were randomized to receive adrenaline alone (n = 10, group C) and adrenaline plus glucagon (n = 10, group G). All animals were resuscitated according to the 2010 European Resuscitation Council guidelines. Hemodynamic variables were measured before arrest, during arrest and resuscitation, and during the first 60 minutes after return of spontaneous circulation. Survival and a neurologic alertness score were measured at 48 hours after return of spontaneous circulation.

RESULTS: Return of spontaneous circulation was achieved in 8 animals (80%) from group C and 10 animals (100%) from group G (P = .198). A significant gradual increase in coronary perfusion pressure and diastolic aortic pressure over time, which started 1 minute after the onset of cardiopulmonary resuscitation, was observed. Three animals (30%) from group C and 9 animals (90%) from group G survived after 48 hours (P = .006), whereas neurologic examination was significantly better in the animals of group G (P < .001).

CONCLUSIONS: In this porcine model of prolonged ventricular fibrillation, the addition of glucagon to adrenaline improves hemodynamics during resuscitation and early postresuscitation period and may increase survival.

MARCADORS

Els pacients recuperats d'una ACR presenten valors de troponines T superiors als valors normals

Am J Cardiol. 2013 Oct 1;112(7):933-7. doi: 10.1016/j.amjcard.2013.05.024. Epub 2013 Jun 22.

Prevalence of troponin elevations in patients with cardiac arrest and implications for assessing quality of care in hypothermia centers.

Kontos MC, Ornato JP, Kurz MC, Roberts CS, Gossip M, Dhindsa HS, Reid RD, Peberdy MA.
Source: Internal Medicine, Pauley Heart Center, Division of Cardiology, Virginia Commonwealth University, Richmond, Virginia; Department of Emergency Medicine, Virginia Commonwealth University, Richmond, Virginia. Electronic address: mkontos@mcvh-vcu.edu.

Abstract

The prevalence of troponin elevations in patients with cardiac arrest (CA) using newer generation troponin assays when the ninety-ninth percentile is used has not been well described. We studied patients admitted with CA without ST elevation myocardial infarction (MI). Treatment included a multidisciplinary protocol that included routine use of hypothermia for appropriate patients. Serial assessment of cardiac biomarkers, including troponin I was obtained over the initial 24 to 36 hours. Patients were classified into 1 of 5 groups on the basis of multiples of the ninety-ninth percentile (upper reference limit [URL]), using the peak troponin I value: <1×, 1 to 3×, 3 to 5×, 5 to 10×, and >10×. Serial changes between the initial and second troponin I values were also assessed. A total of 165 patients with CA (mean age 58 ± 16, 67% men) were included. Troponin I was detectable in all

but 2 patients (99%); all others had peak troponin I values that were greater than or equal to the URL. Most patients had peak troponin I values >10× URL, including patients with ventricular fibrillation or ventricular tachycardia (85%), asystole (50%), and pulseless electrical activity (59%). Serial changes in troponin I were present in almost all patients: ≥20% change in 162 (98%), ≥30% change in 159 (96%), and an absolute increase of ≥0.02 ng/ml in 85% of patients. In conclusion, almost all patients with CA who survived to admission had detectable troponin I, most of whom met biomarker guideline criteria for MI. Given the high mortality of these patients, these data have important implications for MI mortality reporting at CA treatment centers.

Relació entre els gasos arterials i la supervivència i pronòstic…

Am J Emerg Med. 2013 Oct 9. pii: S0735-6757(13)00673-6. doi: 10.1016/j.ajem.2013.09.044. [Epub ahead of print]

Association between mean arterial blood gas tension and outcome in cardiac arrest patients treated with therapeutic hypothermia.

Lee BK, Jeung KW, Lee HY, Lee SJ, Jung YH, Lee WK, Heo T, Min YI.

Source: Department of Emergency Medicine, Chonnam National University Hospital, Gwangju, Republic of Korea. Electronic address: bbukkuk@hanmail.net.

Abstract

BACKGROUND: Studies investigating the relationship between blood gas tension and outcome in cardiac arrest survivors have reported conflicting results. This might have resulted from the use of a blood gas value at a single time point and the difference in the proportion of patients treated with therapeutic hypothermia (TH). We investigated the association of the mean blood gas tensions calculated from blood gas values obtained between restoration of spontaneous circulation and end of TH with the outcome in cardiac arrest patients treated with TH.

METHODS: This was a retrospective observational study including 213 adult cardiac arrest patients. The cohort was divided into four categories based on the distribution of the mean Pao2 data using quartiles as cut-off values between categories. According to the mean Paco2, the cohort was divided into hypocarbia, normocarbia, and hypercarbia. The primary outcome was in-hospital mortality.

RESULTS: In multivariate analysis, the mean Pao2 quartile was not associated with in-hospital mortality, but hypocarbia was significantly associated with increased risk of in-hospital mortality (odds ratio 2.522; 95% confidence interval 1.184-5.372; P = .016). We found a V-shaped independent association between the mean Pao2 and poor neurologic outcome at hospital discharge, with the risk of poor neurologic outcome increasing with a descending and ascending Pao2 ranges.

CONCLUSION: Mean Pao2 had no independent association with in-hospital mortality whereas hypocarbia was independently associated with in-hospital mortality. We also found a V-shaped independent association between the mean Pao2 and poor neurologic outcome at hospital discharge.

Possibles marcadors de pronòstic al LCR

Resuscitation. 2013 Nov 11. pii: S0300-9572(13)00840-X. doi: 10.1016/j.resuscitation.2013.10.032. [Epub ahead of print]

Cerebrospinal fluid biomarkers in cardiac arrest survivors.

Rosén C, Rosén H, Andreasson U, Bremell D, Bremler R, Hagberg L, Rosengren L, Blennow K, Zetterberg H.

Source: Clinical Neurochemistry Laboratory, Institute of Neuroscience and Physiology, Department of Psychiatry and Neurochemistry, the Sahlgrenska Academy, University of Gothenburg, Mölndal, Sweden. Electronic address: christoffer.rosen@neuro.gu.se.

Abstract

Aim The aim of this study was to investigate the levels of various cerebrospinal fluid (CSF) biomarkers related to neuronal damage, inflammation and amyloid β (Aβ) metabolism in patients resuscitated after an out-of-hospital cardiac arrest (CA).
Methods CSF levels of neurofilament light protein (NFL), total tau (T-tau), hyperphosphorylated tau (P-tau), YKL-40, Aβ38, Aβ40, Aβ42, soluble amyloid precursor protein α and β (sAPPα and sAPPβ) were measured in 21 patients approximately two weeks after CA and in 21 age-matched neurologically healthy controls. The biomarker levels were also compared between patients with good and poor long-term clinical outcome according to Glasgow Outcome Scale (GOS), activities of daily living (ADL) and mini-mental state examination (MMSE), measuring neurologic function, daily functioning and cognitive function, respectively.
Results Patients with CA had a very marked increase in the CSF levels of NFL, T-tau and YKL-40 as compared with controls. The levels were increased at about 1200, 700 and 100%, respectively. NFL and T-tau were significantly higher in patients with poor outcome according to all three outcome measures. Patients with poor outcome according to GOS and ADL had higher levels of YKL-40. Levels of Aβ38, Aβ40, Aβ42, sAPPα and sAPPβ were lower in patients with a low MMSE score. P-tau was not significantly altered.
Conclusions Biomarkers reflecting neuronal damage and inflammation, but not so much Aβ metabolism, were significantly altered in patients after a CA, and the changes were more pronounced in the groups with poor outcome. This calls for future larger studies to determine the prognostic potential of these biomarkers

MONITORATGE

Monitoratge de l'oximetria cerebral durant la RCP

Crit Care Med. 2013 Nov 15. [Epub ahead of print]
A Feasibility Study of Cerebral Oximetry During In-Hospital Mechanical and Manual Cardiopulmonary Resuscitation.
Parnia S, Nasir A, Ahn A, Malik H, Yang J, Zhu J, Dorazi F, Richman P.
Source: All authors: Resuscitation Research Group, Division of Pulmonary & Critical Care, Department of Medicine, State University of New York at Stony Brook, Stony Brook Medical Center, T17-040 Health Sciences Center, Stony Brook, NY.
Abstract
OBJECTIVE: A major hurdle limiting the ability to improve the quality of resuscitation has been the lack of a noninvasive real-time detection system capable of monitoring the quality of cerebral and other organ perfusion, as well as oxygen delivery during cardiopulmonary resuscitation. Here, we report on a novel system of cerebral perfusion targeted resuscitation.
DESIGN: An observational study evaluating the role of cerebral oximetry (Equanox; Nonin, Plymouth, MI, and Invos; Covidien, Mansfield, MA) as a real-time marker of cerebral perfusion and oxygen delivery together with the impact of an automated mechanical chest compression system (Life Stat; Michigan Instruments, Grand Rapids, MI) on oxygen delivery and return of spontaneous circulation following in-hospital cardiac arrest.
SETTING: Tertiary medical center.
PATIENTS: In-hospital cardiac arrest patients (n = 34).
MAIN RESULTS: Cerebral oximetry provided real-time information regarding the quality of perfusion and oxygen delivery. The use of automated mechanical chest compression device (n = 12) was associated with higher regional cerebral oxygen saturation compared with manual chest compression device (n = 22) (53.1% ± 23.4% vs 24% ± 25%, p = 0.002). There was a significant difference in mean regional cerebral oxygen saturation (median % ± interquartile range) in patients who achieved return of spontaneous circulation (n = 15) compared with those without return of spontaneous circulation (n = 19) (47.4% ± 21.4% vs 23% ± 18.42%, p < 0.001). After controlling for patients achieving return of spontaneous circulation or not, significantly higher mean regional

cerebral oxygen saturation levels during cardiopulmonary resuscitation were observed in patients who were resuscitated using automated mechanical chest compression device ($p < 0.001$).
CONCLUSIONS: The integration of cerebral oximetry into cardiac arrest resuscitation provides a novel noninvasive method to determine the quality of cerebral perfusion and oxygen delivery to the brain. The use of automated mechanical chest compression device during in-hospital cardiac arrest may lead to improved oxygen delivery and organ perfusion.

DONACIÓ DESPRÉS DE LA MORT CIRCULATÒRIA

En alguna cosa els americans ens tenen com a referent!!!

Ann Emerg Med. 2013 Nov 18. pii: S0196-0644(13)01488-1. doi: 10.1016/j.annemergmed.2013.10.014. [Epub ahead of print]
Uncontrolled Organ Donation After Circulatory Determination of Death: US Policy Failures and Call to Action.
Wall SP, Munjal KG, Dubler NN, Goldfrank LR; NYC uDCDD Study Group.
Source: Department of Emergency Medicine, Bellevue Hospital Center, NYU School of Medicine, New York, NY.
Abstract
In the United States, more than 115,000 patients are wait-listed for organ transplants despite that there are 12,000 patients each year who die or become too ill for transplantation. One reason for the organ shortage is that candidates for donation must die in the hospital, not the emergency department (ED), either from neurologic or circulatory-respiratory death under controlled circumstances. Evidence from Spain and France suggests that a substantial number of deaths from cardiac arrest may qualify for organ donation using uncontrolled donation after circulatory determination of death (uDCDD) protocols that rapidly initiate organ preservation in out-of-hospital and ED settings. Despite its potential, uDCDD has been criticized by panels of experts that included neurologists, intensivists, attorneys, and ethicists who suggest that organ preservation strategies that reestablish oxygenated circulation to the brain retroactively negate previous death determination based on circulatory-respiratory criteria and hence violate the dead donor rule. In this article, we assert that in uDCDD, all efforts at saving lives are exhausted before organ donation is considered, and death is determined according to "irreversible cessation of circulatory and respiratory functions" evidenced by "persistent cessation of functions during an appropriate period of observation and/or trial of therapy." Therefore, postmortem in vivo organ preservation with chest compressions, mechanical ventilation, and extracorporeal membrane oxygenation is legally and ethically appropriate. As frontline providers for patients presenting with unexpected cardiac arrest, emergency medicine practitioners need be included in the uDCDD debate to advocate for patients and honor the wishes of the deceased.

ORGANITZACIÓ

Validació d'un model de risc per l'ACR intrahospitalària, estadísticament molt interesant.

J Am Coll Cardiol. 2013 Aug 13;62(7):601-9. doi: 10.1016/j.jacc.2013.05.051. Epub 2013 Jun 13.
Risk-standardizing survival for in-hospital cardiac arrest to facilitate hospital comparisons.
Chan PS, Berg RA, Spertus JA, Schwamm LH, Bhatt DL, Fonarow GC, Heidenreich PA, Nallamothu BK, Tang F, Merchant RM; AHA GWTG-Resuscitation Investigators.
Source: Saint Luke's Mid America Heart Institute, Kansas City, Missouri; University of Missouri, Kansas City, Missouri 64111, USA. pchan@cc-pc.com Abstract
OBJECTIVES: The purpose of this study is to develop a method for risk-standardizing hospital survival after cardiac arrest.
BACKGROUND: A foundation with which hospitals can improve quality is to be able to benchmark their risk-adjusted performance against other hospitals, something that cannot currently be done for survival after in-hospital cardiac arrest.

METHODS: Within the Get With The Guidelines (GWTG)-Resuscitation registry, we identified 48,841 patients admitted between 2007 and 2010 with an in-hospital cardiac arrest. Using hierarchical logistic regression, we derived and validated a model for survival to hospital discharge and calculated risk-standardized survival rates (RSSRs) for 272 hospitals with at least 10 cardiac arrest cases.
RESULTS: The survival rate was 21.0% and 21.2% for the derivation and validation cohorts, respectively. The model had good discrimination (C-statistic 0.74) and excellent calibration. Eighteen variables were associated with survival to discharge, and a parsimonious model contained 9 variables with minimal change in model discrimination. Before risk adjustment, the median hospital survival rate was 20% (interquartile range: 14% to 26%), with a wide range (0% to 85%). After adjustment, the distribution of RSSRs was substantially narrower: median of 21% (interquartile range: 19% to 23%; range 11% to 35%). More than half (143 [52.6%]) of hospitals had at least a 10% positive or negative absolute change in percentile rank after risk standardization, and 50 (23.2%) had a ≥20% absolute change in percentile rank.
CONCLUSIONS: We have derived and validated a model to risk-standardize hospital rates of survival for in-hospital cardiac arrest. Use of this model can support efforts to compare hospitals in resuscitation outcomes as a foundation for quality assessment and improvement.

ENSENYAMENT DE LA RCP

RCP a les escoles a França!!!

Issues Compr Pediatr Nurs. 2012;35(3-4):143-52. doi: 10.3109/01460862.2012.708214.
Sudden cardiac arrest in schools: the role of the school nurse in AED program implementation.
Boudreaux S, Broussard L.
Source: St. Martin Parish Schools, Breaux Bridge, LA, USA.
Abstract
A school nurse has many obstacles to overcome when providing emergency care for an age group ranging from four to adulthood. The 21st century school nurse faces the challenges of providing care to medically fragile children at multiple sites, with high student-nurse ratios. The implementation of an Automated External Defibrillation (AED) program can assist the school nurse and staff in providing necessary life-saving services for Sudden Cardiac Arrest (SCA) victims of all ages. The purpose of this article is to describe AED program implementation in a school setting, including the need, essential elements, benefits, and potential concerns related to this vital component of the American Heart Association five-link chain of survival.

Als USA estan fins I tot pitjor que aquí en quant a enseyament de la RCP a la població general (ells però, al menys ho tenen registrat i ho publiquen al JAMA…)

JAMA Intern Med. 2013 Nov 18. doi: 10.1001/jamainternmed.2013.11320. [Epub ahead of print]
Rates of Cardiopulmonary Resuscitation Training in the United States.
Anderson ML, Cox M, Al-Khatib SM, Nichol G, Thomas KL, Chan PS, Saha-Chaudhuri P, Fosbol EL, Eigel B, Clendenen B, Peterson ED.
Source: Department of Medicine, Duke Clinical Research Institute, Duke University Medical Center, Durham, North Carolina.
Abstract
IMPORTANCE: Prompt bystander cardiopulmonary resuscitation (CPR) improves the likelihood of surviving an out-of-hospital cardiac arrest. Large regional variations in survival after an out-of-hospital cardiac arrest have been noted.
OBJECTIVES: To determine whether regional variations in county-level rates of CPR training exist across the United States and the factors associated with low rates in US counties.
DESIGN, SETTING, AND PARTICIPANTS: We used a cross-sectional ecologic study design to analyze county-level rates of CPR training in all US counties from July 1, 2010, through June 30, 2011. We

used CPR training data from the American Heart Association, the American Red Cross, and the Health & Safety Institute. Using multivariable logistic regression models, we examined the association of annual rates of adult CPR training of citizens by these 3 organizations (categorized as tertiles) with a county's geographic, population, and health care characteristics.
EXPOSURE: Completion of CPR training.
MAIN OUTCOME AND MEASURES: Rate of CPR training measured as CPR course completion cards distributed and CPR training products sold by the American Heart Association, persons trained in CPR by the American Red Cross, and product sales data from the Health & Safety Institute.
RESULTS: During the study period, 13.1 million persons in 3143 US counties received CPR training. Rates of county training ranged from 0.00% to less than 1.29% (median, 0.51%) in the lower tertile, 1.29% to 4.07% (median, 2.39%) in the middle tertile, and greater than 4.07% or greater (median, 6.81%) in the upper tertile. Counties with rates of CPR training in the lower tertile were more likely to have a higher proportion of rural areas (adjusted odds ratio, 1.12 [95% CI, 1.10-1.15] per 5-percentage point [PP] change), higher proportions of black (1.09 [1.06-1.13] per 5-PP change) and Hispanic (1.06 [1.02-1.11] per 5-PP change) residents, a lower median household income (1.18 [1.04-1.34] per $10 000 decrease), and a higher median age (1.28 [1.04-1.58] per 10-year change). Counties in the South, Midwest, and West were more likely to have rates of CPR training in the lower tertile compared with the Northeast (adjusted odds ratios, 7.78 [95% CI, 3.66-16.53], 5.56 [2.63-11.75], and 5.39 [2.48-11.72], respectively).
CONCLUSIONS AND RELEVANCE: Annual rates of US CPR training are low and vary widely across communities. Counties located in the South, those with higher proportions of rural areas and of black and Hispanic residents, and those with lower median household incomes have lower rates of CPR training than their counterparts. These data contribute to known geographic disparities in survival of cardiac arrest and offer opportunities for future community interventions.

Com ja sabem, el que no es practica s'oblida

Isr Med Assoc J. 2013 Oct;15(10):622-7.
Cardiopulmonary resuscitation skills retention and self-confidence of preclinical medical students.
Avisar L, Shiyovich A, Aharonson-Daniel L, Nesher L.
Source: Department of Emergency Medicine, Recanati School for Community Health Professions, Soroka University Medical Center, Beer Sheva, Israel.
Abstract
BACKGROUND: Sudden cardiac death is the most common lethal manifestation of heart disease and often the first and only indicator. Prompt initiation of cardiopulmonary resuscitation (CPR) undoubtedly saves lives. Nevertheless, studies report a low level of competency of medical students in CPR, mainly due to deterioration of skills following training.
OBJECTIVES: To evaluate the retention of CPR skills and confidence in delivering CPR by preclinical medical students.
METHODS: A questionnaire and the Objective Structured Clinical Examination (OSCE) were used to assess confidence and CPR skills among preclinical, second and third-year medical students who had passed a first-aid course during their first year but had not retrained since.
RESULTS: The study group comprised 64 students: 35 were 1 year after training and 29 were 2 years after training. The groups were demographically similar. Preparedness, recollection and confidence in delivering CPR were significantly lower in the 2 years after training group compared to those 1 year after training ($P < 0.05$). The mean OSCE score was 19.8 +/- 5.2 (of 27) lower in those 2 years post-training than those 1 year post-training (17.8 +/- 6.35 vs. 21.4 +/- 3.4 respectively, $P = 0.009$). Only 70% passed the OSCE, considerably less in students 2 years post-training than in those 1 year post-training (52% vs. 86%, $P < 0.01$). Lowest retention was found in checking safety, pulse check, airway opening, rescue breathing and ventilation technique skills. A 1 year interval was chosen by 81% of the participants as the optimal interval for retraining (91% vs. 71% in the 2 years post-training group vs. the 1 year post- training group respectively, $P = 0.08$).

CONCLUSIONS: Confidence and CPR skills of preclinical medical students deteriorate significantly within 1 year post-training, reaching an unacceptable level 2 years post-training. We recommend refresher training at least every year.

CASE REPORTS

Un sobre l'ona J, FV persistent i hipotèrmia… que acaba bé.

Acute Card Care. 2013 Nov 5. [Epub ahead of print]
Classic Osborn waves and incessant ventricular fibrillation in severe hypothermia.
Atreya AR, Arora S.
Source: Baystate Medical Center/Tufts University School of Medicine, Internal Medicine , Springfield , USA.
Abstract
Cardiac arrhythmias in severe hypothermia are common and are managed primarily by re-warming techniques. A 64-year-old male presented with alcohol associated aspiration pneumonia, sepsis and severe hypothermia and was noted to have classic ECG changes of hypothermia, i.e. Osborn waves. The patient had a tumultuous clinical course with prolonged resuscitative measures. Ultimately, an early focus on invasive core temperature re-warming with cardio-pulmonary bypass resulted in a favorable outcome.

Un sobre un cas de ressuscitació amb trombòlisi durant la ressuscitació amb ECMO. També acaba bé

Gen Thorac Cardiovasc Surg. 2013 Nov 9. [Epub ahead of print]
Successful treatment of fulminant pulmonary embolism with extracorporeal life support and simultaneous systemic thrombolytic therapy after 1 h of cardiopulmonary resuscitation.
Kamiya H, Aubin H, Akhyari P, Walz R, Saeed D, Miles-Kindgen D, Lichtenberg A.
Source: Department of Cardiovascular Surgery, University Hospital Duesseldorf, Moorenstrasse 5, 40225, Duesseldorf, Germany, hkamiya88@yahoo.co.jp.
Abstract
Here we describe a patient with a fulminant pulmonary embolism, who has been successfully treated with an extracorporeal life support system and simultaneous systemic thrombolytic therapy after 1 h of cardiopulmonary resuscitation.

Un de com funciona la cadena de supervivència. També acaba bé (per això els envien a publicar…)

Heart Lung. 2013 Oct 25. pii: S0147-9563(13)00364-6. doi: 10.1016/j.hrtlng.2013.10.011. [Epub ahead of print] Complete recovery after out-of-hospital cardiac arrest with prolonged (59 min) mechanical cardiopulmonary resuscitation, mild therapeutic hypothermia and complex percutaneous coronary intervention for ST-elevation myocardial infarction.
Zimmermann S, Rohde D, Marwan M, Ludwig J, Achenbach S.
Source: Department of Cardiology, University Hospital of Erlangen-Nuremberg, Germany. Electronic address: stefan.zimmermann@uk-erlangen.de.
Abstract
We report on a 68 years old survivor of an out-of-hospital cardiac arrest with favorable neurological outcome following prolonged cardiopulmonary resuscitation (CPR 59 min) until return of spontaneous circulation (ROSC) due to ST-elevation myocardial infarction (STEMI). The case demonstrates the beneficial effect of an optimal rescue chain including basic life support performed by trained bystanders, short response time of the emergency medical service, uninterrupted CPR during transportation using a mechanical chest compression system (LUCAS®), in combination with optimal intensive care management of cardiogenic shock after ROSC including

multivessel emergency percutaneous coronary intervention (PCI) and intravascular therapeutic hypothermia (Coolgard®-System).

PEDIATRIA

UN ARTICLE LOCAL!!!! L'àcid làctic previ a l'ACR sembla un marcador de pitjor pronòstic en les ACR pediàtriques

An Pediatr (Barc). 2013 Nov 25. pii: S1695-4033(13)00399-8. doi: 10.1016/j.anpedi.2013.09.018. [Epub ahead of print] [Relationship between previous severity of illness and outcome of cardiac arrest in hospital.] [Article in Spanish] Serrano M, Rodríguez J, Espejo A, Del Olmo R, Llanos S, Del Castillo J, López-Herce J.
Source: Servicio de Cuidados Intensivos Pediátricos, Hospital General Universitario Gregorio Marañón, Instituto de Investigación, Hospital General Universitario Gregorio Marañón, Madrid, Red de Salud Maternoinfantil y del Desarrollo (Red SAMID), Madrid, España.
Abstract
OBJECTIVES: To analyze the relationship between previous severity of illness, lactic acid, creatinine and inotropic index with mortality of in-hospital cardiac arrest (CA) in children, and the value of a prognostic index designed for adults.
METHODS: The study included total of 44 children aged from 1 month to 18 years old who suffered a cardiac arrest while in hospital. The relationship between previous severity of illness scores (PRIMS and PELOD), lactic acid, creatinine, treatment with vasoactive drugs, inotropic index with return of spontaneous circulation and survival at hospital discharge was analyzed.
RESULTS: The large majority (90.3%) of patients had a return of spontaneous circulation, and 59% survived at hospital discharge. More than two-thirds (68.2%) were treated with inotropic drugs at the time of the CA. The patients who died had a higher lactic acid before the CA (3.4 mmol/L) than survivors (1.4 mmol/L), P=.04. There were no significant differences in PRIMS, PELOD, creatinine, inotropic drugs, and inotropic index before CA between patients who died and survivors.
CONCLUSION: A high lactic acid previous to cardiac arrest could be a prognostic factor of in-hospital cardiac arrest in children.

Prevenció secundària en l'ACR dels nens a les escoles. I pels adults no???, mireu la supervivència a Noruega!!!

Curr Opin Cardiol. 2013 Nov 26. [Epub ahead of print]
Secondary prevention of sudden cardiac death: does it work in children?
Vetter VL, Haley DM.
Source: Perelman School of Medicine at the University of Pennsylvania, Division of Cardiology, Department of Pediatrics The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania, USA.
Abstract
PURPOSE OF REVIEW: Over half of young sudden cardiac arrest victims show no prior warning signs or symptoms and survival depends on secondary prevention, notably prompt initiation of cardiopulmonary resuscitation (CPR) and the use of an automated external defibrillator (AED), for out-of-hospital arrests. There is increasing public interest in and uptake of public access defibrillation programs in communities and schools. Our purpose was to review recent data on sudden cardiac arrest in children and its outcome to identify ways to improve the current low survival rate of youth who experience sudden cardiac arrest.
RECENT FINDINGS: Increases in bystander cardiopulmonary resuscitation in Norway to 73% have occurred alongside increasing survival from sudden cardiac arrest from shockable rhythms to 52%. Studies in Denmark and the US show that survival of 69-74% is possible when a shockable rhythm is present and an automated external defibrillator is immediately applied. Up to 70-80% of US schools have automated external defibrillators, but not all have effective emergency action plans to maximize the impact of the presence of the AED.

SUMMARY: Studies suggest that education to increase bystander CPR and implementation of school AEDs and other public access defibrillation programs improve the survival of youth experiencing sudden cardiac arrest to 74% when optimal programs are in place. Methods to enhance such programs are presented. All involved with the health and education of youth are urged to implement best practices to protect youth and improve survival from sudden cardiac arrest.