

DEAs

Els DEAs públics no són accessibles durant la nit a Dinamarca, una cosa semblant al que pot passar a Barcelona amb els DEAs de les farmàcies...

Circulation. 2013 Nov 12;128(20):2224-31. doi: 10.1161/CIRCULATIONAHA.113.003066. Epub 2013 Sep 13.

Automated external defibrillators inaccessible to more than half of nearby cardiac arrests in public locations during evening, nighttime, and weekends.

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Author information

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Abstract

BACKGROUND:

Despite wide dissemination, use of automated external defibrillators (AEDs) in community settings is limited. We assessed how AED accessibility affected coverage of cardiac arrests in public locations.

METHODS AND RESULTS:

We identified cardiac arrests in public locations (1994-2011) in terms of location and time and viewed them in relation to the location and accessibility of all AEDs linked to the emergency dispatch center as of December 31, 2011, in Copenhagen, Denmark. AED coverage of cardiac arrests was defined as cardiac arrests within 100 m (109.4 yd) of an AED and further categorized according to AED accessibility at the time of cardiac arrest. Daytime, evening, and nighttime were defined as 8 am to 3:59 pm, 4 to 11:59 pm, and midnight to 7:59 am, respectively. Of 1864 cardiac arrests in public locations, 61.8% (n=1152) occurred during the evening, nighttime, or weekends. Of 552 registered AEDs, 9.1% (n=50) were accessible at all hours, and 96.4% (n=532) were accessible during the daytime on all weekdays. Regardless of AED accessibility, 28.8% (537 of 1864) of all cardiac arrests were covered by an AED. Limited AED accessibility decreased coverage of cardiac arrests by 4.1% (9 of 217) during the daytime on weekdays and by 53.4% (171 of 320) during the evening, nighttime, and weekends.

CONCLUSIONS:

Limited AED accessibility at the time of cardiac arrest decreased AED coverage by 53.4% during the evening, nighttime, and weekends, which is when 61.8% of all cardiac arrests in public locations occurred. Thus, not only strategic placement but also uninterrupted AED accessibility warrant attention if public-access defibrillation is to improve survival after out-of-hospital cardiac arrest.

RCP MECÀNICA

Una revisió sobre les ACR que es donen a la muntanya, sobretot en gent gran. Suggereixen l'ús de dispositius mecànics per realitzar RCP durant el rescat.

Am J Emerg Med. 2013 Nov 12. pii: S0735-6757(13)00767-5. doi: 10.1016/j.ajem.2013.11.007. [Epub ahead of print] **Considerations for resuscitation at high altitude in elderly and untrained populations and rescuers.**

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Abstract

With the development of transportation technologies, elderly people with chronic diseases are increasingly enjoying trekking and tours of nature resorts that include mountain highlands. Because of problems related to circulation, respiration, metabolism, and/or the musculoskeletal system in this population, the impact of high altitude on cardiopulmonary function is increased. Alpine accidents, therefore, tend to be more common in this population, and cases of cardiopulmonary arrest (CPA) at high altitudes seem to be increasing. However, relatively few studies have described cardiopulmonary resuscitation (CPR) at high altitudes. Although insufficient studies are available to standardize CPR guidelines at high altitude at this time, the aim of this review is to summarize previous studies relevant to physiologic changes after exposure to high-altitude environments and exercise, which may be a risk factor for CPA in elderly trekkers. In addition, we summarize our previous studies that described the effect of CPR procedures on cardiopulmonary function in untrained rescuers. The available data suggest that prolonged CPR at high altitudes requires strenuous work from rescuers and negatively affects their cardiopulmonary physics and subjectively measured fatigue. Alpine rescue teams should therefore be well prepared for their increased physical burden and difficult conditions. Elderly travelers should be made aware of their increased risk of CPA in alpine settings. The use of mechanical devices to assist CPR should be considered wherever possible.

*Polèmica sobre l'article de l'ús de l'Autopulse als helicopters que teniu a la bibliografia de la setmana 4 de 2013, amb el títol de **The analysis of efficacy for AutoPulse™ system in flying helicopter***

Resuscitation. 2014 Jan;85(1):e13. doi: 10.1016/j.resuscitation.2013.08.280. Epub 2013 Oct 25.

Does a higher ROSC-rate with mechanical CPR lead to better survival in helicopter rescue?

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La resposta a la carta anterior.

Resuscitation. 2014 Jan;85(1):e15. doi: 10.1016/j.resuscitation.2013.09.025. Epub 2013 Oct 24.

Reply to Letter: Does a higher ROSC-rate with mechanical CPR lead to better survival in helicopter rescue?

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Un case report d'una RCP perllongada amb LUCAS 2 al laboratori d'hemodinàmica.

Catheter Cardiovasc Interv. 2014 Jan 8. doi: 10.1002/ccd.25368. [Epub ahead of print]
Survival with good neurological outcome in a patient with prolonged ischemic cardiac arrest - Utility of automated chest compression systems in the cardiac catheterization laboratory.

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Abstract

The management of refractory cardiac arrest during invasive coronary procedures has substantial logistical challenges and is typically associated with disappointing outcomes. We describe the case of a young woman with recalcitrant ventricular fibrillation due to acute anterior ST-elevation myocardial infarction caused by occlusion of her proximal left anterior descending artery. Survival without neurological deficit or organ failure was achieved following primary percutaneous reperfusion and a total of fifty two minutes of intra-procedural chest compression support, made possible by the use of an automated chest compression device

ACR Extrahospitalària

És important que des de les centrals de coordinació s'afini el diagnòstic de respiració agònica, ja que els testimonis de vegades no són clars i això fa que en menys ocasions s'els indiqui fer RCP.

Emerg Med J. 2014 Jan 8. doi: 10.1136/emmermed-2013-203112. [Epub ahead of print]

Abnormal breathing of sudden cardiac arrest victims described by laypersons and its association with emergency medical service dispatcher-assisted cardiopulmonary resuscitation instruction.

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Abstract

BACKGROUND:

Current guidelines for cardiopulmonary resuscitation (CPR) emphasise that emergency medical service (EMS) dispatchers should identify sudden cardiac arrest (CA) with abnormal breathing and assist lay rescuers performing CPR. However, lay rescuers description of abnormal breathing may be inconsistent, and it is unclear how EMS dispatchers provide instruction for CPR based on the breathing status of the CA victims described by laypersons.

METHODS AND RESULTS:

To investigate the incidence of abnormal breathing and the association between the EMS dispatcher-assisted CPR instruction and layperson CPR, we retrospectively analysed 283 witnessed CA cases whose information regarding breathing status of CA victims was available from population-based prospective cohort data. In 169 cases (59.7%), laypersons described that the CA victims were breathing in various ways, and that the victims were 'not breathing' in 114 cases (40.3%). Victims described as breathing in various ways were provided EMS dispatch-instruction for CPR less frequently than victims described as 'not breathing' (27.8% (47/169) vs 84.2% (96/114); $p < 0.001$). Multivariate logistic regression showed that EMS dispatch-instruction for CPR was associated significantly with layperson CPR (adjusted OR, 11.0; 95% CI, 5.72 to 21.2).

CONCLUSIONS:

This population-based study indicates that 60% of CA victims showed agonal respiration, which was described as breathing in various ways at the time of EMS call. Although EMS dispatch-instruction was associated significantly with an increase in layperson CPR, abnormal breathing was associated with a much lower rate of CPR instruction and, in turn, was related to a much lower rate of bystander CPR.

Si el trasllat a centres de referència millora el pronòstic, si establíssim un Codi ACR amb accions coordinades, no podríem millorar més?

Prehosp Emerg Care. 2014 Jan 8. [Epub ahead of print]

Survival and Neurologic Outcome after Out-of-Hospital Cardiac Arrest: Results One Year after Regionalization of Post-Cardiac Arrest Care in a Large Metropolitan Area.

Bosson N, Kaji AH, Niemann JT, Eckstein M, Rashi P, Tadeo R, Gorospe D, Sung G, French WJ, Shavelle D, Thomas JL, Koenig W.

Abstract

Abstract Background. Post-resuscitation care of cardiac arrest patients at specialized centers may improve outcome after out-of-hospital cardiac arrest (OOHCA). This study describes experience with regionalized care of resuscitated patients.

Methods. Los Angeles (LA) County established regionalized cardiac care in 2006. Since 2010, protocols mandate transport of nontraumatic OOHCA patients with field return of spontaneous circulation (ROSC) to a STEMI Receiving Center (SRC) with a hypothermia protocol. All SRC report outcomes to a registry maintained by the LA County Emergency Medical Services (EMS) Agency. We report the first year's data. The primary outcome was survival with good neurologic outcome, defined by a Cerebral Performance Category (CPC) score of 1 or 2.

Results. The SRC treated 927 patients from April 2011 through March 2012 with median age 67; 38% were female. There were 342 patients (37%) who survived to hospital discharge. CPC scores were unknown in 47 patients. Of the 880 patients with known CPC scores, 197 (22%) survived to hospital discharge with a CPC score of 1 or 2. The initial rhythm was VF/VT in 311 (34%) patients, of whom 275 (88%) were witnessed. For patients with an initial shockable rhythm, 183 (59%) survived to hospital discharge and 120 (41%) had survival with good neurologic outcome. Excluding patients who were alert or died in the ED, 165 (71%) patients with shockable rhythms received therapeutic hypothermia (TH), of whom 67 (42%) had survival with good neurologic outcome. Overall, 387 patients (42%) received TH. In the TH group, the adjusted OR for CPC 1 or 2 was 2.0 (95%CI 1.2-3.5, $p = 0.01$), compared with no TH. In contrast, the proportion of survival with good neurologic outcome in the City of LA in 2001 for all witnessed arrests (irrespective of field ROSC) with a shockable rhythm was 6%.

Conclusion. We found higher rates of neurologically intact survival from OOHCA in our system after regionalization of post-resuscitation care as compared to historical data.

FÀRMACS

Un estudi japonès molt petit on es compara el Nifekalant amb l'Amiodarona, sense que trobin diferències entre tots dos fàrmacs.

J Anesth. 2014 Jan 5. [Epub ahead of print]

Comparison of nifekalant and amiodarone for resuscitation of out-of-hospital cardiopulmonary arrest resulting from shock-resistant ventricular fibrillation.

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Abstract

PURPOSE:

Nifekalant is a pure potassium channel blocker that has been used to treat ventricular tachyarrhythmias since 1999 in Japan. Intravenous amiodarone was approved later than nifekalant in Japan, and it is still unclear which of the two agents is superior. The aim of this study was to compare the efficacy of nifekalant and amiodarone for resuscitation of out-of-hospital cardiopulmonary arrest caused by shock-resistant ventricular fibrillation.

METHODS:

From December 2005 to January 2011, ambulance services transported 283 out-of-hospital cardiopulmonary arrest patients to our hospital. Of these, 25 patients were treated with nifekalant or amiodarone in response to ventricular fibrillation that was resistant to two or more shocks. We undertook a retrospective analysis of these 25 patients.

RESULTS:

We enrolled 20 men and 5 women with a mean age (\pm standard deviation) of 61.1 ± 16.4 years. All 25 patients were treated with tracheal intubation and intravenous epinephrine. Fourteen patients received nifekalant and 11 patients received amiodarone. The rates of return of spontaneous circulation (ROSC) (nifekalant, 5/14, versus amiodarone, 4/11; $P = 0.97$) and survival to discharge (nifekalant, 4/14, versus amiodarone, 2/11; $P = 0.89$) were not significantly different between the two groups. The time from nifekalant or amiodarone administration to ROSC was 6.0 ± 6.6 and 20.3 ± 10.0 min, respectively, which was significantly different ($P < 0.05$).

CONCLUSION:

In this small sample size study, nifekalant, compared with amiodarone, is equally effective for ROSC and survival to discharge after shock-resistant ventricular fibrillation and can achieve ROSC more quickly. Further prospective studies are needed to confirm our results.

El dantrolene millora la supervivència en els pacients (en aquest cas porcs de Yorkshire) en ACR per FV. En una altra vida no sigueu mai pocs de Yorkshire...

Circulation. 2014 Jan 8. [Epub ahead of print]

Dantrolene Improves Survival Following Ventricular Fibrillation by Mitigating Impaired Calcium Handling in Animal Models.

Zamiri N, Massé S, Ramadeen A, Kusha M, Hu X, Azam MA, Liu J, Lai PF, Vigmond EJ, Boyle PM, Behradfar E, Al-Hesayen A, Waxman MB, Backx P, Dorian P, Nanthakumar K.

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Abstract

BACKGROUND:

Resistant ventricular fibrillation, re-fibrillation and diminished myocardial contractility are important factors leading to poor survival following cardiac arrest. We hypothesized dantrolene improves survival following VF by rectifying calcium dysregulation caused by VF.

METHODS AND RESULTS:

VF was induced in 26 Yorkshire pigs for 4 min. CPR was then commenced for 3 min and dantrolene or isotonic saline was infused at the onset of CPR. Animals were defibrillated and observed for 30 min. To study the effect of VF on calcium handling and its modulation by dantrolene, hearts from 14 New-Zealand rabbits were Langendorff-perfused. Inducibility of VF following dantrolene administration was documented. Optical mapping was performed to evaluate diastolic spontaneous calcium elevations (SCaE) as a measure of cytosolic calcium leak. Sustained Return of Spontaneous Circulation (ROSC) ($sBP \geq 60$ mmHg) was achieved in 85%

of dantrolene group compared to 39% of controls. (P=0.02) ROSC was achieved earlier in dantrolene-treated pigs after successful defibrillation. (21±6 sec vs. 181±57 sec in controls, P=0.005) Median number of re-fibrillation episodes was lower in dantrolene group (0 vs. 1, P=0.04). In isolated rabbit hearts, successful induction of VF was achieved in 83% of attempts in controls versus 41% in dantrolene-treated hearts (P=0.007). VF caused diastolic calcium leak in the form of SCaEs. Administration of 20µM dantrolene significantly decreased SCaE amplitude vs. controls. (0.024±0.013 vs. 0.12±0.02 AU (200 msec CL), P=0.001)

CONCLUSIONS: Dantrolene infusion during CPR facilitates successful defibrillation, improves hemodynamics post-defibrillation, decreases re-fibrillation and thus improves survival following cardiac arrest. The effects are mediated through normalizing VF-induced dysfunctional calcium cycling.

REGISTRE

A Noruega, el pronòstic de les ACR intra i extrahospitalàries és similar, i no és dolent!

Acta Anaesthesiol Scand. 2014 Jan 9. doi: 10.1111/aas.12258. [Epub ahead of print]

Comparison of in-hospital and out-of-hospital cardiac arrest outcomes in a Scandinavian community.

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Abstract

BACKGROUND:

Reported incidence and survival from in-hospital and out-of-hospital cardiac arrest show great variability, making it difficult to compare the groups. In order to eliminate effects of time and culture, we investigated out-of-hospital cardiac arrest compared with in-hospital cardiac arrest in our community over a 1-year period.

METHODS:

We conducted a cohort study including patients with in-hospital and out-of-hospital cardiac arrest. Multiple data sources were screened in order to identify all cardiac arrest patients. Utstein style data were collected prospectively from 1 December 2008 to 30 November 2009 with subsequent analysis.

RESULTS:

A total of 380 resuscitations because of cardiac arrest were included, 154 (40.6%) in-hospital and 226 (59.4%) out-of-hospital. The in-hospital cardiac arrest group was older, had higher proportions of witnessed cardiac arrest, bystander cardiopulmonary resuscitation, bystander direct current (DC) shock and professional first rescuer. Survival to hospital discharge was 16.2% for in-hospital cardiac arrest vs. 16.8% for out-of-hospital cardiac arrest.

CONCLUSION:

Survival from in-hospital and out-of-hospital cardiac arrest in this cohort is similar.

RCP BÀSICA

Si t'han de fer RCP els testimonis, que siguin molts, que no siguin de la teva família i no ho facin a casa...

Resuscitation. 2013 Dec 30. pii: S0300-9572(13)00931-3. doi:

10.1016/j.resuscitation.2013.12.019. [Epub ahead of print]

Factors Associated with Quality of Bystander CPR: the Presence of Multiple Rescuers and Bystander-initiated CPR without Instruction.

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Abstract

AIMS:

To identify the factors associated with good-quality bystander cardiopulmonary resuscitation (BCPR).

METHODS:

Data were prospectively collected from 553 out-of-hospital cardiac arrests (OHCAs) managed with BCPR in the absence of emergency medical technicians (EMT) during 2012. The quality of BCPR was evaluated by EMTs at the scene and was assessed according to the standard recommendations for chest compressions, including proper hand positions, rates and depths.

RESULTS:

Good-quality BCPR was more frequently confirmed in OHCAs that occurred in the central/urban region (56.3% [251/446] vs. 39.3% [42/107], $p=0.0015$), had multiple rescuers (31.8% [142/446] vs. 11.2% [12/107], $p<0.0001$) and received bystander-initiated BCPR (22.0% [98/446] vs. 5.6% [6/107], $p<0.0001$). Good-quality BCPR was less frequently performed by family members (46.9% [209/446] vs. 67.3% [72/107], $p=0.0001$), elderly bystanders (13.5% [60/446] vs. 28.0% [30/107], $p=0.0005$) and in at-home OHCAs (51.1% [228/446] vs. 72.9% [78/107], $p<0.0001$). BCPR duration was significantly longer in the good-quality group (median, 8 vs. 6min, $p=0.0015$). Multiple logistic regression analysis indicated that multiple rescuers (odds ratio=2.8, 95% CI: 1.5-5.6), bystander-initiated BCPR (2.7, 1.1-7.3), non-elderly bystanders (1.9, 1.1-3.2), occurrence in the central region (2.1, 1.3-3.3) and duration of BCPR (1.1, 1.0-1.1) were associated with good-quality BCPR. Moreover, good-quality BCPR was initiated earlier after recognition/witness of cardiac arrest compared with poor-quality BCPR (3 vs. 4min, $p=0.0052$). The rate of neurologically favourable survival at one year was 2.7% and 0% in the good-quality and poor-quality groups, respectively ($p=0.1357$).

CONCLUSIONS:

The presence of multiple rescuers and bystander-initiated CPR are predominantly associated with good-quality BCPR.

CURES POST-RCP

Un estudi petit sobre el valor pronòstic del monitoratge amb EEG durant la hipotèrmia.

J Intensive Care Med. 2014 Jan 7. [Epub ahead of print]

Continuous Electroencephalogram in Comatose Postcardiac Arrest Syndrome Patients Treated With Therapeutic Hypothermia: Outcome Prediction Study.

Sadaka F, Doerr D, Hindia J, Lee KP, Logan W.

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Abstract

PURPOSE:

Therapeutic Hypothermia (TH) is the only therapeutic intervention proven to significantly improve survival and neurologic outcome in comatose postcardiac arrest patients and is now considered standard of care. When we discuss prognostication with regard to comatose survivors postcardiac arrest, we should look for tools that are both reliable and accurate and that achieve a false-positive rate (FPR) equal to or very closely approaching zero.

METHODS:

We retrospectively reviewed data that were prospectively collected on all cardiac arrest patients admitted to our ICU. Continuous electroencephalogram (cEEG) monitoring was performed as part of our protocol for therapeutic hypothermia in comatose postcardiac arrest patients. The primary outcome measure was the best score on hospital discharge on the 5-point Glasgow-Pittsburgh cerebral performance category (CPC) scores.

RESULTS:

A total of 58 patients were included in this study. Twenty five (43%) patients had a good neurologic outcome (CPC score of 1-2). Three (5.2%) patients had nonconvulsive status epilepticus, all of whom had poor outcome (CPC = 5). Seventeen (29%) patients had burst suppression (BS); all had poor outcome. Both nonconvulsive seizures (NCS) and BS had a specificity of 100% (95% confidence interval [CI], 84%-100%), positive predictive values of 100% (95% CI, 31%-100%), and 100% (95% CI, 77%-100%), respectively. Both NCS and BS had FPRs of zero (95% CI, 0.0-0.69, and 0.0-0.23, respectively).

CONCLUSIONS:

In comatose postcardiac arrest patients treated with hypothermia, EEG during the maintenance and rewarming phase of hypothermia can contribute to prediction of neurologic outcome. Pending large multicenter prospective studies evaluating the role of cEEG in prognostication, our study adds to the existing evidence that cEEG can play a potential role in prediction of outcome in postcardiac arrest patients treated with hypothermia.

El fluxe cerebral mesurat per doppler transcranial en els supervivents d'una ACR no sembla tenir relació amb el pronòstic

Resuscitation. 2013 Dec 30. pii: S0300-9572(13)00933-7. doi: 10.1016/j.resuscitation.2013.12.021. [Epub ahead of print]

Duplex Sonography of Cerebral Blood Flow after Cardiac Arrest-A Prospective Observational Study.

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Abstract

AIM:

Despite successful resuscitation, cardiac arrest (CA) often has a poor clinical prognosis. Different diagnostic tools have been established to predict patients' outcome. However, their sensitivity remains low. Assessment of cerebral perfusion by duplex ultrasound might provide additional information regarding the extent of neuronal damage. The aim of the present study was to analyse the changes of global cerebral blood flow (CBF) and intracranial blood flow parameters in the acute stage after CA and its correlation with patients' outcome.

METHODS:

We investigated 54 patients (17-85 years, mean age: 63±17 years) after CA with return of spontaneous circulation on an intensive care unit. All patients received therapeutic hypothermia (TH) for 24hours after CA and reanimation. Serial measurements of CBF as well as intracranial blood flow velocities and pulsatility indices of the middle cerebral artery and the

basal vein of Rosenthal were performed within the first 10 days using duplex ultrasound. Clinical outcome was measured using the Cerebral Performance Category.

RESULTS:

Measurements were successful in 53 patients. CBF values differed between 210-1100ml/min. 24 patients (45%) attained a good outcome. No correlation between CBF or intracranial blood flow characteristics and outcome was found. Neither cerebral hypo- nor hyperperfusion was associated with a fatal outcome.

CONCLUSION:

Cerebral perfusion varies widely after CA. Neither hypo- nor hyperperfusion seem to be an independent risk factor for poor outcome. Duplex ultrasound of cerebral haemodynamics after CA is suitable but probably of limited prognostic value.

Que tindran aquests nòrdics que fan les coses tan bé... serà perquè a Stavanger tenen la central de Laerdal? ;)

Resuscitation. 2014 Jan 9. pii: S0300-9572(14)00011-2. doi:

10.1016/j.resuscitation.2014.01.002. [Epub ahead of print]

Life years saved, standardised mortality rates and causes of death after hospital discharge in out-of-hospital cardiac arrest survivors.

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Abstract

Aim of the study: Out-of-hospital cardiac arrest (OHCA) accounts for many unexpected deaths in Europe and the survival rates in different regions vary considerably. We have previously reported excellent survival to discharge rates in the Stavanger region. We now describe the long-term outcome of OHCA victims in our region. Methods: In this retrospective observational study, we followed all OHCA hospital discharge survivors between 01.07.2002 and 30.06.2011 (n=213) for a minimum of 1 year and up to 10 years. Based on the national death statistics stratified for gender and age, we could calculate the potential life years saved, standardised mortality rates (SMR) and delineate the causes of death after hospital discharge. Results: Of the 213 patients who were discharged from the hospital, 91% had a cardiac origin of their OHCA. The mean potential life years saved per patient was 22.8 years. The observed five-year survival rate was 76%. The overall SMR in our study cohort was 2.3 when compared to the age- and gender-matched population. Cardiac disease was a prominent cause of late deaths, with the specific SMR for cardiac disease-related deaths being as high as 42 in males and 140 in females. Conclusion: Resuscitation of OHCA victims lead to a significant long-term benefit with respect to life years saved. Cardiac disease was the main cause of death after hospital discharge. More studies are needed to identify the potential of therapeutic interventions and rehabilitation efforts that may further enhance the long-term outcomes in OHCA hospital discharge survivors.

Potser els inotropics que donem per les alteracions hemodinàmiques de la hipotèrmia poden empitjorar el pronòstic.

Resuscitation. 2014 Jan 9. pii: S0300-9572(14)00013-6. doi:

10.1016/j.resuscitation.2013.12.031. [Epub ahead of print]

Hemodynamics and vasopressor support in therapeutic hypothermia after cardiac arrest: Prognostic implications.

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Abstract

AIM:

Inducing therapeutic hypothermia (TH) in out-of-hospital cardiac arrest (OHCA) can be challenging due to its impact on central hemodynamics and vasopressors are frequently used to maintain adequate organ perfusion. The aim of this study was to assess the association between level of vasopressor support and mortality.

METHODS:

In a 6-year period, 310 comatose OHCA patients treated with TH were included. Temperature, hemodynamic parameters and level of vasopressors were registered from admission to 24 hours after rewarming. Level of vasopressor support was assessed by the cardiovascular sub-score of Sequential Organ Failure Assessment (SOFA). The population was stratified by use of dopamine as first line intervention (D-group) or use of dopamine+norepinephrine/epinephrine (DA-group). Primary endpoint was 30-day mortality and secondary endpoint was in-hospital cause of death.

RESULTS:

Patients in the DA-group carried a 49% all-cause 30-day mortality rate compared to 23% in the D-group, $p < 0.0001$, corresponding to an adjusted hazard ratio (HR) of 2.0 (95%CI: 1.3-3.0), $p = 0.001$. The DA-group had an increased 30-day mortality due to neurological injury (HR=1.7 (95%CI: 1.1-2.7), $p = 0.02$). Cause of death was anoxic brain injury in 78%, cardiovascular failure in 18% and multi-organ failure in 4%. The hemodynamic changes of TH reversed at normothermia, although the requirement for vasopressor support (cardiovascular SOFA ≥ 3) persisted in 80% of patients.

CONCLUSIONS:

In survivors after OHCA treated with TH the induced hemodynamic changes reversed after normothermia, while the need for vasopressor support persisted. Patients requiring addition of norepinephrine/epinephrine on top of dopamine had an increased 30-day all-cause mortality, as well as death from neurological injury.

No hi ha difer ncia entre fer una PCI o trombol sis en els pacients recuperats d'una ACR secund ria a un IAM, totes dues coses semblen millorar el pron stic per igual.

Clinics (Sao Paulo). 2013 Apr;68(4):523-9. doi: 10.6061/clinics/2013(04)14.

Comparing percutaneous coronary intervention and thrombolysis in patients with return of spontaneous circulation after cardiac arrest.

Li YQ, Sun SJ, Liu N, Hu CL, Wei HY, Li H, Liao XX, Li X.

Author information: The First Affiliated Hospital of Sun Yat-sen University, Emergency Department, Guangzhou, People's Republic of China.

Abstract

OBJECTIVE:

To evaluate the effects of percutaneous coronary intervention and thrombolysis after restoration of spontaneous circulation in cardiac arrest patients with ST-elevation myocardial infarction using meta-analysis.

METHODS:

We performed a meta-analysis of clinical studies indexed in the PUBMED, MEDLINE and EMBASE databases and published between January 1995 and October 2012. In addition, we compared the hospital discharge and neurological recovery rates between the patients who received percutaneous coronary intervention and those who received thrombolysis.

RESULTS:

Twenty-four studies evaluating the effects of percutaneous coronary intervention or thrombolysis after restoration of spontaneous circulation in cardiac arrest patients with ST-elevation myocardial infarction were included. Seventeen of the 24 studies were used in this meta-analysis. All studies were used to compare percutaneous coronary intervention and thrombolysis. The meta-analysis showed that the rate of hospital discharge improved with both percutaneous coronary intervention ($p < 0.001$) and thrombolysis ($p < 0.001$). We also found that cardiac arrest patients with ST-elevation myocardial infarction who received thrombolysis after restoration of spontaneous circulation did not have decreased hospital discharge ($p = 0.543$) or neurological recovery rates ($p = 0.165$) compared with those who received percutaneous coronary intervention.

CONCLUSION:

In cardiac arrest patients with ST-elevation myocardial infarction who achieved restoration of spontaneous circulation, both percutaneous coronary intervention and thrombolysis improved the hospital discharge rate. Furthermore, there were no significant differences in the hospital discharge and neurological recovery rates between the percutaneous coronary intervention-treated group and the thrombolysis-treated group.

Una revisió sobre el pronòstic dels pacients recuperats d'una ACR sotmesos a hipotèrmia.

Crit Care. 2014 Jan 14;18(1):202. [Epub ahead of print]

How to assess prognosis after cardiac arrest and therapeutic hypothermia.

Taccone FS, Cronberg T, Friberg H, Greer D, Horn J, Oddo M, Scolletta S, Vincent JL.

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Abstract

The prognosis of patients who are admitted in a comatose state following successful resuscitation after cardiac arrest remains uncertain. Although the introduction of therapeutic hypothermia (TH) and improvements in post-resuscitation care have significantly increased the number of patients who are discharged home with minimal brain damage, short-term assessment of neurological outcome remains a challenge. The need for early and accurate prognostic predictors is crucial, especially since sedation and TH may alter the neurological examination and delay the recovery of motor response for several days. The development of additional tools, including electrophysiological examinations (electroencephalography and somatosensory evoked potentials), neuroimaging and chemical biomarkers, may help to evaluate the extent of brain injury in these patients. Given the extensive literature existing on this topic and the confounding effects of TH on the strength of these tools in outcome prognostication after cardiac arrest, the aim of this narrative review is to provide a practical approach to post-anoxic brain injury when TH is used. We also discuss when and how these tools could be combined with the neurological examination in a multimodal approach to improve outcome prediction in this population.

ENTRENAMENT EN RCP

Ajudant a fer les compressions empenyent les espatlles durant l'ensenyament de l'RCP millora la qualitat de les compressions.

Eur J Emerg Med. 2014 Jan 18. [Epub ahead of print]

Magical manoeuvre: a 5-s instructor's intervention helps lightweight female rescuers achieve the required chest compression depth.

Krikscionaitiene A, Pranskunas A, Stasaitis K, Dambrauskiene M, Jasinskas N, Dambrauskas Z, Vaitkaitiene E, Vencloviene J, Vaitkaitis D.

Author information: Departments of aDisaster Medicine bIntensive Care, Crises Research Centre cDepartment of Surgery, Lithuanian University of Health Sciences dHospital of Lithuanian University of Health Sciences Kaunas Clinics eDepartment of Environmental Sciences, Faculty of Natural Sciences, Vytautas Magnus University, Kaunas, Lithuania.

Abstract

BACKGROUND: Adequate chest compression (CC) depth is crucial for resuscitation outcomes. Lightweight rescuers, particularly women, are often unable to achieve the required 5-6 cm CC depth. This nonrandomized cohort study investigated new strategies to improve CC performance.

OBJECTIVE: To evaluate the effects of a 5-s instructor's intervention on the depth of CCs performed by female rescuers during standard video self-instruction basic life support training.

METHODS: Data were prospectively collected from January 2011 to January 2012 from 336 female medical and pharmacy students undergoing cardiopulmonary resuscitation (CPR) training at the Lithuanian University of Health Sciences. During the training process, the instructors performed a simple 5-s intervention (Andrew's manoeuvre) with all of the rescuers in the study group. The instructor pushed 10 times on the shoulders of each trainee while she performed CCs to achieve the maximal required compression depth. Immediately after training, the participants were asked to perform a 6-min basic life support test on a manikin that was connected to a PC with Skill Reporter System software; the quality of the participants' CPR skills was then evaluated.

RESULTS: The CC depth in the study group increased by 6.4 mm ($P < 0.001$) compared with the control group (52.9 vs. 46.6 mm). A regression analysis showed that Andrew's manoeuvre increased the depth of the CCs among women by $14.87 \times (1 - 0.01 \times \text{weight})$ mm.

CONCLUSION: A simple 5-s instructor's intervention during the CPR training significantly improved the performance of the female rescuers and helped them achieve the CC depth required by 2010 resuscitation guidelines. Andrew's manoeuvre is most effective among the women with the lowest body weight.

GUIES

Les noves guies fan que les compressions es facin més profundes, però no suficient. Val a dir que la diferència és significativa pel número tan gran de pacients inclosos, però que clínicament la diferència de les mitjanes (2,5mm) és pràcticament menyspreable.

Resuscitation. 2014 Jan 10. pii: S0300-9572(14)00012-4. doi:

10.1016/j.resuscitation.2013.12.030. [Epub ahead of print]

Chest compression depth after change in CPR guidelines-improved but not sufficient.

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Abstract

AIMS:

Cardiopulmonary resuscitation is one of the most vital therapeutic options for patients with cardiac arrest. Sufficient chest compression depth turned out to be of utmost importance to increase the likelihood of a return of spontaneous circulation. Furthermore, the use of real-time feedback-systems for resuscitation is associated with improvement of compression quality. The European Resuscitation Council changed their recommendation about minimal compression depth from 2005 (40mm) to 2010 (50mm). The aim of the present study was to determine whether this recommendation of the new guidelines was implemented successfully in an Emergency medical service using a real-time feedback-system and to what extent a guideline-based CPR training leads to a "change in behaviour" of rescuers, respectively.

METHODS AND RESULTS:

The electronic resuscitation data of 294 patients were analysed retrospectively within two observational periods regarding fulfilment of the corresponding chest compression guideline requirements: ERC 2005 (40mm) 01.07.2009-30.06.2010 (n=145) and ERC 2010 (50mm) 01.07.2011-30.06.2012 (n=149). The mean compression depth during the first period was 47.1mm (SD 11.1) versus 49.6mm (SD 12.0) within the second period (p<0.001). With respect to the corresponding ERC Guidelines 2005 and 2010, the proportion of chest compressions reaching the minimal depth decreased (73.9% vs. 49.1%) (p<0.001). There was no correlation between compression depth and patient age, sex or duration of resuscitation.

CONCLUSIONS:

The present study was able to show a significant increase in chest compression depth after implementation of the new ERC guidelines. Even by using a real-time feedback system we failed to sustain chest compression quality at the new level as set by ERC guidelines 2010. In consequence, the usefulness of a fixed chest compression depth should be content of further investigations.

ORGANITZACIÓ

Han d'haver metges a les ambulàncies??? Sembla que si, al menys per atendre les aturades.

PLoS One. 2014 Jan 8;9(1):e84424. doi: 10.1371/journal.pone.0084424.

Physician Presence in an Ambulance Car Is Associated with Increased Survival in Out-of-Hospital Cardiac Arrest: A Prospective Cohort Analysis.

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4Department of Emergency and Critical Care Center, Kyushu University Hospital, Fukuoka, Japan.

Abstract

The presence of a physician seems to be beneficial for pre-hospital cardiopulmonary resuscitation (CPR) of patients with out-of-hospital cardiac arrest. However, the effectiveness of a physician's presence during CPR before hospital arrival has not been established. We conducted a prospective, non-randomized, observational study using national data from out-of-hospital cardiac arrests between 2005 and 2010 in Japan. We performed a propensity

analysis and examined the association between a physician's presence during an ambulance car ride and short- and long-term survival from out-of-hospital cardiac arrest. Specifically, a full non-parsimonious logistic regression model was fitted with the physician presence in the ambulance as the dependent variable; the independent variables included all study variables except for endpoint variables plus dummy variables for the 47 prefectures in Japan (i.e., 46 variables). In total, 619,928 out-of-hospital cardiac arrest cases that met the inclusion criteria were analyzed. Among propensity-matched patients, a positive association was observed between a physician's presence during an ambulance car ride and return of spontaneous circulation (ROSC) before hospital arrival, 1-month survival, and 1-month survival with minimal neurological or physical impairment (ROSC: OR = 1.84, 95% CI 1.63-2.07, $p=0.00$ in adjusted for propensity and all covariates); 1-month survival: OR = 1.29, 95% CI 1.04-1.61, $p=0.02$ in adjusted for propensity and all covariates); cerebral performance category (1 or 2): OR = 1.54, 95% CI 1.03-2.29, $p=0.04$ in adjusted for propensity and all covariates); and overall performance category (1 or 2): OR = 1.50, 95% CI 1.01-2.24, $p=0.05$ in adjusted for propensity and all covariates). A prospective observational study using national data from out-of-hospital cardiac arrests shows that a physician's presence during an ambulance car ride was independently associated with increased short- and long-term survival.

Els alumnes de Medicina poden fer una bona ressuscitació (suposant que els ensenyem, és clar)

Am J Emerg Med. 2013 Dec 11. pii: S0735-6757(13)00844-9. doi: 10.1016/j.ajem.2013.12.007. [Epub ahead of print]

Medical students do not adversely affect the quality of cardiopulmonary resuscitation for ED patients.

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Abstract

OBJECTIVES:

To investigate the effect of medical student involvement on the quality of actual cardiopulmonary resuscitation (CPR).

METHODS:

A digital video-recording system was used to record and analyze CPR procedures for adult patients from March 2011 to September 2012.

RESULTS:

Twenty-six student-involved and 40 non-student-involved cases were studied. The chest compression rate in the student-involved group was significantly higher than that in the non-student-involved group ($P < .001$). The proportion of compressions at "above 110 cpm" was higher in the student-involved group ($P = .021$), whereas the proportion at "90-110 cpm" was lower in the student-involved group ($P = .015$). The ratio of hands-off time to total manual compression time was significantly lower in the student-involved group than in the non-student-involved group ($P = .04$). In contrast, the student-involved group delivered a higher ventilation rate compared with the non-student-involved group ($P = .02$). The observed time delay to first compression and first ventilation were very similar between the groups. There were no significant differences between the groups in either return of spontaneous circulation or time from survival to discharge.

CONCLUSION:

Student-involved resuscitation teams were able to perform good CPR, with higher compression rates and fewer interruptions. However, the supervision from medical staff is still

needed to ensure appropriate chest compression and ventilation rate in student-involved actual CPR in the emergency department.

RECERCA EXPERIMENTAL

Sobre la velocitat del reescalfament influeix en l'efectivitat de la hipotèrmia

Crit Care Med. 2014 Feb;42(2):e106-13. doi: 10.1097/CCM.0b013e3182a63fff.

The effects of the rate of postresuscitation rewarming following hypothermia on outcomes of cardiopulmonary resuscitation in a rat model*.

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2Department of Emergency Medicine, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China. 3Keck School of Medicine of the University of Southern California, Los Angeles, CA.

Abstract

OBJECTIVE:

To investigate the optimal rewarming rate following therapeutic hypothermia in a rat model of cardiopulmonary resuscitation. Both clinical and laboratory studies have demonstrated that mild therapeutic hypothermia following cardiopulmonary resuscitation improves myocardial and neurologic outcomes of cardiac arrest. However, the optimal rewarming strategy following therapeutic hypothermia remains to be explored.

DESIGN:

Prospective randomized controlled experimental study.

SETTING:

University-affiliated research institution.

SUBJECTS:

Twenty-three healthy male Sprague-Dawley rats.

INTERVENTIONS:

Four groups of Sprague-Dawley rats were randomized: 1) normothermia group (control), 2) rewarming rate at 2°C/hr, 3) rewarming rate at 1°C/hr, and 4) rewarming rate at 0.5°C/hr. Ventricular fibrillation was induced and untreated for 8 minutes, and defibrillation was attempted after 8 minutes of cardiopulmonary resuscitation. For the 2, 1, and 0.5°C/hr groups, rapid cooling was started at the beginning of cardiopulmonary resuscitation. On reaching the target cooling temperature of 33°C ± 0.2°C, the temperature was maintained with the aid of a cooling blanket until 4 hours after resuscitation. Rewarming was then initiated at the rate of 2.0, 1.0, or 0.5°C/hr, respectively, until the body temperature reached 37°C ± 0.2°C. Blood samples were drawn at baseline and postresuscitation of 4, 6, 8, 10, and 12 hours for the measurements of blood gas and serum biomarkers.

MEASUREMENTS AND MAIN RESULTS:

Blood temperature significantly decreased in the hypothermic groups from cardiopulmonary resuscitation to postresuscitation 4 hours. Significantly better cardiac output, ejection fraction, myocardial performance index, reduced neurologic deficit scores, and longer duration of survival were observed in the 1 and 0.5°C/hr groups. The increased serum concentration of troponin I, interleukin-6, and tumor necrosis factor-α was partly attenuated in the 1 and 0.5°C/hr groups when compared with the control and 2°C/hr groups.

CONCLUSIONS:

This study demonstrated that the severity of myocardial, cerebral injuries, and inflammatory reaction after cardiopulmonary resuscitation was reduced when mild therapeutic hypothermia was applied. A rewarming rate at 0.5-1°C/hr did not alter the beneficial effects of therapeutic hypothermia. However, a rapid rewarming rate at 2°C/hr abolished the beneficial effects of hypothermia.

ACR INTRAHOSPITALÀRIA

Com és la supervivència de les ACR a les UCIs? Atenció que una de les autores és la Maaret Castren, la Gran Jefa de l'ERC.

Resuscitation. 2014 Jan 7. pii: S0300-9572(14)00007-0. doi: 10.1016/j.resuscitation.2013.12.027. [Epub ahead of print]

Incidence and outcome from adult cardiac arrest occurring in the intensive care unit: A systematic review of the literature.

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Abstract

BACKGROUND:

Significant amount of data on the incidence and outcome of out-of-hospital and in-hospital cardiac arrest have been published. Cardiac arrest occurring in the intensive care unit has received less attention.

AIMS:

To evaluate and summarize current knowledge of intensive care unit cardiac arrest including quality of data, and results focusing on incidence and patient outcome. Sources and methods: We conducted a literature search of the PubMed, CINAHL and Cochrane databases with the following search terms (Medical Subheadings): heart arrest AND intensive care unit OR critical care OR critical care nursing OR monitored bed OR monitored ward OR monitored patient. We included articles published from the 1st of January 1990 till 31st of December 2012. After exclusion of all duplicates and irrelevant articles we evaluated quality of studies using a predefined quality assessment score and summarized outcome data.

RESULTS:

The initial search yielded 794 articles of which 780 were excluded. Three papers were added after a manual search of the eligible studies' references. One paper was identified manually from the literature published after our initial search was completed, thus the final sample consisted of 18 papers. Of the studies included thirteen were retrospective, two based on prospective registries and three were focused prospective studies. All except two studies were from a single institution. Six studies reported the incidence of intensive care unit cardiac arrest, which varied from 5.6 to 78.1 cardiac arrests per 1000 intensive care unit admissions. The most frequently reported initial cardiac arrest rhythms were non-shockable. Patient outcome was variable with survival to hospital discharge being in the range of 0-79% and long-term survival ranging from 1-69%. Nine studies reported neurological status of survivors, which was mostly favorable, either no neurological sequelae or cerebral performance score mostly of 1-2. Studies focusing on post cardiac surgery patients reported the best long-term survival rates of 45-69%.

CONCLUSIONS:

At present data on intensive care unit cardiac arrest is quite limited and originates mostly from retrospective single center studies. The quality of data overall seems to be poor and thus focused prospective multi-center studies are needed.