This week's PubMed 4th – 10th June 2023: articles of interest n = 41

CPR AND COVID-19

1. Emerg Med J. 2023 Jun 6:emermed-2022-213001. doi: 10.1136/emermed-2022-213001. Online ahead of print.

Association between the COVID-19 pandemic in 2020 and out-of-hospital cardiac arrest outcomes and bystander resuscitation efforts for working-age individuals in Japan: a nationwide observational and epidemiological analysis.

Ushimoto T(1), Yao S(2), Nunokawa C(2), Murasaka K(3), Inaba H(4)(5).

ABSTRACT

BACKGROUND: Improving out-of-hospital cardiac arrest (OHCA) prognosis within the working-age population is important, but no studies have investigated the effects of COVID-19 pandemic specifically on the working-age population with OHCAs. We aimed to determine the association between the 2020 COVID-19 pandemic and OHCA outcomes and bystander resuscitation efforts among the working-age population. METHODS: Prospectively collected nationwide, population-based records concerning 166 538 working-age individuals (men, 20-68 years; women, 20-62 years) with OHCA between 2017 and 2020 were assessed. We compared characteristics and outcome differences of the arrests between three prepandemic years (2017-2019) and the pandemic year 2020. The primary outcome was neurologically favourable 1-month survival (cerebral performance category 1 or 2). Secondary outcomes were bystander cardiopulmonary resuscitation (BCPR), dispatcher-assisted instruction for cardiopulmonary resuscitation (DAI-CPR), bystander-provided defibrillation (public access defibrillation (PAD)) and 1-month survival. We examined variations in bystander resuscitation efforts and outcomes among pandemic phase and regional classifications. RESULTS: Among 149 300 OHCA cases, 1-month survival (2020, 11.2%; 2017-2019, 11.1% (crude OR (cOR) 1.00, 95% CI 0.97 to 1.05)) and 1-month neurologically favourable survival (7.3%-7.3% (cOR 1.00, 95% CI 0.96 to 1.05)) were unchanged; however, the neurologically favourable 1-month survival rate decreased in 12 of the most COVID-19-affected prefectures (7.2%-7.8% (cOR 0.90, 95% CI 0.85 to 0.96)), whereas it increased in 35 other prefectures (7.5%-6.6% (cOR 1.15, 95% CI 1.07 to 1.23)). Favourable outcomes decreased for OHCAs of presumed cardiac aetiology (10.3%-10.9% (cOR 0.94, 95% CI 0.90 to 0.99)) but increased for OHCAs of non-cardiac aetiology (2.5%-2.0% (cOR 1.27, 95% CI 1.12 to 1.44)). BCPR provision increased from 50.7% of arrests prepandemic to 52.3% (crude OR 1.07, 95% CI 1.04 to 1.09). Compared with 2017-2019, home-based OHCAs in 2020 increased (64.8% vs 62.3% (crude OR 1.12, 95% CI 1.09 to 1.14)), along with DAI-CPR attempts (59.5% vs 56.6% (cOR 1.13, 95% CI 1.10 to 1.15)) and multiple calls to determine a destination hospital (16.4% vs 14.5% (cOR 1.16, 95% CI 1.12 to 1.20)). PAD use decreased from 4.0% to 3.7% but only during the state of emergency period (7 April-24 May 2020) and in prefectures significantly affected by COVID-19. CONCLUSIONS: Reviewing automated external defibrillator (AED) locations and increasing BCPR through DAI-CPR may help prevent pandemic-associated decreases in survival rates for patients with cardiac OHCAs.

2. Chiropr Man Therap. 2023 Jun 5;31(1):16. doi: 10.1186/s12998-023-00488-y.

COVID-19-specific adult basic life support guideline strategies for chiropractors and other healthcare providers to maximize the safety and efficacy of resuscitation: a commentary.

Woo CC(1).

ABSTRACT

BACKGROUND: The emergence of an unprecedented novel severe acute respiratory syndrome coronavirus-2 (SARS-C0V-2), which causes the coronavirus disease 2019 (COVID-19) pandemic, has

created new scenarios in basic life support (BLS) management. According to current evidence, SARS-CoV-2 can be transmitted airborne in aerosol particles during resuscitation. Research evidence found an alarming global increase in out-of-hospital cardiac arrests during the COVID-19 pandemic. Healthcare providers are legally obliged to respond to cardiac arrest as soon as possible. Chiropractors will likely encounter potential exercise-related and non-exercise-related cardiac emergencies at some point in their professional lives. They have a duty of care to respond to emergencies such as cardiac arrest. Chiropractors are increasingly involved in providing care, including emergency care, for athletes and spectators at sporting events. Also, exercise-related cardiac arrest in adult patients may occur during exercise testing or rehabilitation with exercise prescriptions in chiropractic and other healthcare settings. Little is known about the COVID-19 BLS guidelines for chiropractors. Knowledge of the current COVID-19-specific adult BLS guidelines is essential to developing an emergency response plan for the on-field and sideline management of exercise-related cardiac arrest and non-athletic, non-exercise-related cardiac arrest. MAIN TEXT: Seven peer-reviewed articles on the COVID-19-specific BLS guidelines, including two updates, were reviewed for this commentary. Responding to the COVID-19 pandemic, the national and international resuscitation organizations recommended interim COVID-19-specific BLS guidelines with precaution, resuscitation, and education strategies. BLS safety is paramount. A precautionary approach with the bare minimum of appropriate personal protective equipment for resuscitation is recommended. There was disagreement among the COVID-19 BLS guidelines on the level of personal protective equipment. All healthcare professionals should also undergo self-directed BLS e-learning and virtual skill e-training. The summarized COVID-19-specific adult BLS guideline strategies and protocols are tabled, respectively. CONCLUSIONS: This commentary provides a practical overview and highlights current evidence-based intervention strategies of the COVID-19-specific adult BLS guidelines that may help chiropractors and other healthcare providers reduce BLS-related exposures to SARS-CoV-2 and the risks of SARS-CoV-2 transmission and maximize the efficacy of resuscitation. This study is relevant to and impacts future COVID-19-related research in areas such as infection prevention and control.

3. Herz. 2023 Jun 5:1-6. doi: 10.1007/s00059-023-05186-2. Online ahead of print.
Has COVID-19 changed the spectrum of arrhythmias and the incidence of sudden cardiac death?
Kuck KH(1)(2), Schlüter M(3), Vogler J(4), Heeger CH(4), Tilz RR(4).
ABSTRACT
Arrhythmic manifestations of COVID-19 include atrial arrhythmias such as atrial fibrillation or atrial flutter, sinus node dysfunction, atrioventricular conduction abnormalities, ventricular tachyarrhythmias, sudden cardiac arrest, and cardiovascular dysautonomias including the so-called long COVID syndrome. Various pathophysiological mechanisms have been implicated, such as direct viral invasion, hypoxemia, local and systemic inflammation, changes in ion channel physiology, immune activation, and autonomic dysregulation. The development of atrial or ventricular arrhythmias in hospitalized COVID-19 patients has been shown to portend a higher risk of in-hospital death. Management of these arrhythmias should be based on published evidence-based guidelines, with special consideration of the acuity of COVID-19 infection, concomitant use of antimicrobial and anti-inflammatory drugs, and the transient nature of some rhythm disorders. In view of new SARS-CoV-2 variants that may evolve, the development and use of newer antiviral and immunomodulator drugs, and the increasing adoption of vaccination, clinicians must remain vigilant for other arrhythmic manifestations that may occur in association with this novel but potentially deadly disease.

CPR/MECHANICAL CHEST COMPRESSION

1. Anaesthesiologie. 2023 Jun;72(6):419-424. doi: 10.1007/s00101-023-01275-3. Epub 2023 Apr 25.
[Resuscitation of children with persistent ventricular fibrillation-A case for a mechanical resuscitation device?]. [Article in German]
Irrgang M(1)(2), Beckers S(3)(4), Felzen M(3)(4), Schälte G(3), Rossaint R(3), Schröder H(3)(4).
NO ABSTRACT AVAILABLE

REGISTRIES, REVIEWS AND EDITORIALS

1. Trop Doct. 2023 Jun 7:494755231181153. doi: 10.1177/00494755231181153. Online ahead of print.
Post-hypoxic myoclonus; what we know and gaps in knowledge.
Ahmed HS(1).
ABSTRACT
Post-hypoxic myoclonus (PHM) is a rare neurological complication having two different variants depending on acute or chronic onset after cardiopulmonary resuscitation following cardiac arrest: myoclonic status epilepticus (MSE) and Lance-Adams syndrome (LAS) respectively. Clinical and simultaneous electro-encephalographic (EEG) and electromyographic (EMG) tracing can distinguish between the two. Anecdotal treatment with benzodiazepines and anaesthetics (in the case of MSE) have been tried. Although limited evidence is available, valproic acid, clonazepam and levetiracetam, either in combination with other drugs or alone, have shown to control epilepsy associated with LAS effectively. Deep brain stimulation is a novel and promising advance in LAS treatment.

2. Resuscitation. 2023 Jun 5:109861. doi: 10.1016/j.resuscitation.2023.109861. Online ahead of print.
Extracorporeal Cardiopulmonary Resuscitation - Focusing on thetrulyrefractory cardiac arrest population.
Gardner R(1), Berg K(2).
NO ABSTRACT AVALABLE

3. Am J Emerg Med. 2023 Jul;69:114-120. doi: 10.1016/j.ajem.2023.03.009. Epub 2023 Mar 12.
Digit preference and biased conclusions in cardiac arrest studies.
Lapostolle F(1), Schneider E(2), Agostinucci JM(3), Nadiras P(4), Martineau L(5), Metzger J(6), Bertrand P(7), Petrovic T(8), Vianu I(9), Adnet F(10).
ABSTRACT
BACKGROUND: In cardiac arrest (CA), time is directly predictive of patients' prognosis. The increase in mortality resulting from delayed cardiopulmonary resuscitation has been quantified minute by minute. Times reported in CA management studies could reflect a timestamping bias referred to as "digit preference". This phenomenon leads to a preference for certain numerical values (such as 2, 5, or 10) over others (such as 13). Our objective was to investigate whether or not digit preference phenomenon could be observed in reported times of the day related to CA management, as noted in a national registry. METHODS: We analyzed data from the French National Electronic Registry of Cardiac Arrests. We analyzed twelve times-of-the-day corresponding to each of the main steps of CA management reported by the emergency physicians who managed the patients in prehospital settings. We postulated that if CA occurred at random times throughout the day, then we could expect to see events related to CA management occurring at a similar rate each minute of each hour

of the day, at a fraction of 1/60. We compared the fraction of times reported as multiples of 15 (0, 15, 30, and 45 - on the hour, quarters, half hour) with the expected fraction of 4/60 (i.e. 4 × 1/60). MAIN RESULTS: A total of 47,211 times-of-the-day in relation to 6131 CA were analyzed. The most overrepresented numbers were: 0, with 3737 occurrences (8% vs 2% expected, $p < 0.0001$) and 30, with 2807 occurrences (6% vs 2% expected, $p < 0.0001$). Times-of-the-day as multiples of 15 were overrepresented (22% vs 7% expected, $p < 0.0001$). CONCLUSION: Prospectively collected times were considerably influenced by digit preference phenomenon. Studies that are not based on automatic time recordings and that have not evaluated and considered this bias should be interpretated with caution.

4. J Cardiothorac Vasc Anesth. 2023 Jul;37(7):1315-1317. doi: 10.1053/j.jvca.2023.01.035. Epub 2023 Feb 7.
Pro: We Should Routinely Intubate All Patients in Cardiac Arrest.
Gilbey T(1).
NO ABSTRACT AVALABLE

5. Australas Emerg Care. 2023 Jun;26(2):184-192. doi: 10.1016/j.auec.2022.10.006. Epub 2022 Nov 24.
Pre-hospital predictors of long-term survival from out-of-hospital cardiac arrest.
Pemberton K(1), Franklin RC(2), Bosley E(3), Watt K(4).
ABSTRACT
OBJECTIVE: To identify predictors of longer-term outcomes from adult out-of-hospital cardiac arrest of presumed cardiac aetiology. METHODS: In this retrospective cohort study, three large routinely collected databases were linked: 1)QAS Out-of-Hospital Cardiac (OHCA) Registry; 2)Queensland Hospital Admitted Patient Data Collection; and 3)Queensland Registrar General Death Registry. Participants were adult (18years+) residents of Queensland, who suffered an OHCA of presumed cardiac aetiology and had resuscitation attempted by QAS paramedics between 2002 and 2014. Four mutually exclusive outcomes were analysed: 1) No pre-hospital return of spontaneous circulation (ROSC) sustained to the Emergency Department (ED) or ROSC in ED; 2) Survival< 30 days (Pre-hospital ROSC sustained to ED or ROSC in ED but death within 30 days; 3) survival between 30 and 364 days; and 4) survival to 365 + days. Multinomial logistic regression was used to calculate odds ratios and 95 % confidence intervals. RESULTS: Variables significantly predictive of survival to 365 + days after adjusting for all measured confounders are: an initial shockable rhythm; bystander witnessed events with bystander CPR; paramedic witnessed events; intubation placement; time of day (midday-2.59 pm); and attendance by Critical Care Paramedic (CCP). CONCLUSION: From a service provision perspective, attendance of a CCP at an OHCA may be an important factor to achieve preferred long-term outcomes. Enhanced experience, exposure and expertise, together with extended clinical practice, may explain this finding.

IN-HOSPITAL CARDIAC ARREST

No articles identified.

INJURIES AND CPR

No articles identified.

CAUSE OF THE ARREST

1. Heart Rhythm. 2023 Jun 7:S1547-5271(23)02331-7. doi: 10.1016/j.hrthm.2023.06.004. Online ahead of print.

Prevalence of illicit drug use in young sudden cardiac death patients.

Trytell A(1), Osekowski M(1), Zentner D(2), Nehme Z(3), James P(4), Pflaumer A(5), Semsarian C(6), Ingles J(7), Stub D(8), La Gerche A(9), Paratz ED(10).

ABSTRACT

BACKGROUND: Illicit drug use may accelerate coronary disease and cardiac hypertrophy or stimulate arrhythmias. Rates of illicit drug use in young sudden cardiac death (SCD) patients are uncertain. OBJECTIVE: To identify rates of illicit drug use in young SCD patients. METHODS: A prospective state-wide registry identified out of hospital cardiac arrest (OHCA) patients aged 18-50 years from April 2019 to April 2021. Clinical characteristics were compared between patients with and without illicit drug use (defined by toxicological results or reported regular use). Illicit drugs included amphetamine-type substances, cocaine, heroin, cannabis and other drugs. RESULTS: 554/1,378 patients had confirmed cardiac cause of OHCA with 523 undergoing toxicological assessment. There were 170 patients (32.5%) having either positive toxicology for illicit drugs (n=138) or negative toxicology but reported regular drug use (n=32). Patients with SCD and illicit drug use were more commonly male (81.2% vs 72.3%, p=0.028), smokers (38.8% vs 19.8%, p=<0.0001), excess alcohol drinkers (30.6% vs 20.6%, p=0.012), had a psychiatric diagnosis (38.8% vs 25.7%, p=0.002), lower BMI (29.4kg/m2 vs 31.7kg/m2, p=0.0063) and lower rates of hypertension (10.6% vs 18.6%, p=0.019). Death commonly occurred while sedentary (47.5%) or during sleep (45.8%). Accounting for these baseline differences, there were no differences in rates of coronary disease or cardiomyopathy. Cannabis (n=106) was the most common illicit drug identified and polysubstance abuse occurred frequently (n=25). CONCLUSION: Approximately one-third of young SCD patients have positive toxicology at the time of death or reported frequent use of illicit drugs, with high rates of polysubstance abuse.

2. J Prev Med Hyg. 2023 May 16;64(1):E87-E91. doi: 10.15167/2421-4248/jpmh2023.64.1.2782. eCollection 2023 Mar.

Spring, it's time to ROSC.

Stirparo G(1), Andreassi A(2), Sechi GM(2), Signorelli C(1).

ABSTRACT

Out-hospital cardiac arrest (OHCA) is a multi-factor disease. Many studies have correlated OHCA with a patient's lifestyle; unfortunately, less evidence highlights the correlation with meteorological factors. Methods: Analysis of 23959 OHCA rescue performed by the emergency medical system (EMS) of Lombardy Region, the most Italian populated region, in 2018 and 2019, the pre-pandemic era through a retrospective observational cohort study. The aim of the study consists on evaluating the probability of Return Of Spontaneous Circulation (ROSC) during months to highlight potential seasonal impact in ROSC achievement. In March and April, we highlight an increase of ROSC (OR:1.20 95% CI 1.04-1.31; p < 0.001) compared to other months. During March and April, we highlight an increase of public access defibrillation (PAD) (3.5% vs 2.5%; p < 0.001), and a reduction of overage time of first vehicle on scene (11.5 vs 11.8; p < 0.001) and age of patient (73.5 vs 74.2; p < 0.01). Finally, we highlight a slight reduction of cancer patient (1.6% vs 1.1%; p = 0.01). We didn't register significant differences in the other variables analyzed as: onset place, sex, rescue team and the patient's death before the rescue arrive. We highlight a difference in ROSC probability during the first month of spring. We register few differences in patient characteristics and EMS rescue, though just PAD use and age clinically impact OHCA patients. In this study, we are unable to fully understand

the modification of the probability of ROSC in these months. Even though four variables have a statistically significant difference, they can't fully explain this modification. Different variables like meteorological and seasonal factor must be considered. We propose more research on this item.

3. Eur J Intern Med. 2023 Jun 6:S0953-6205(23)00166-8. doi: 10.1016/j.ejim.2023.05.014. Online ahead of print.

Ventricular arrhythmias and cardiac arrest in atrial fibrillation patients with pacemakers and implantable cardioverter-defibrillators.

Fawzy AM(1), Bisson A(2), Bentounes SA(3), Bodin A(3), Herbert J(3), Lip GYH(4), Fauchier L(5).

ABSTRACT

BACKGROUND: Atrial fibrillation (AF) has been linked to ventricular arrhythmias (VAs) and sudden death, but few studies have specifically explored this association. OBJECTIVE: We investigated whether AF is associated with an increased risk of ventricular tachycardia (VT), ventricular fibrillation (VF) and cardiac arrests (CA) in patients with cardiac implantable electronic devices (CIEDs). METHODS: All patients with pacemakers and implantable cardioverter-defibrillators (ICDs) hospitalised between 2010 and 2020 were identified from the French National database. Patients with a prior history of VT/VF/CA were excluded. RESULTS: 701,195 patients were identified initially. After excluding 55,688 patients, 581,781 (90.1%) and 63,726 (9.9%) remained in the pacemaker and ICD groups respectively. 248,046 (42.6%) pacemaker patients had AF and 333,735 (57.4%) had no AF, whereas in the ICD group 20,965 (32.9%) had AF and 42,761 (67.1%) had no AF. The incidence of VT/VF/CA was higher in AF patients compared to non-AF patients both in pacemaker (1.47%/year vs. 0.94%/year) and ICD (5.30%/year vs. 4.21%/year) groups. After multivariable analysis, AF was independently associated with an increased risk of VT/VF/CA in pacemaker (HR 1.236 [95% CI 1.198-1.276]) and ICD (HR 1.167 [95% CI 1.111-1.226]) patients. This risk was still significant in the 1:1 propensity score-matched analysis of the pacemaker (n = 200,977 per subgroup) and ICD cohorts (n = 18,349 per subgroup), HR 1.230 [95% CI 1.187-1.274] and HR 1.134 [95% CI 1.071-1.200] respectively and in the competing risk analysis (pacemaker: HR 1.195 (95% CI 1.154-1.238], ICD: HR 1.094 [95% CI 1.034-1.157]). CONCLUSION: CIED patients with AF have a higher risk of VT/VF/CA compared to CIED patients without AF.

END-TIDAL CO_2

No articles identified.

ORGAN DONATION

1. Ann Thorac Surg. 2023 Jun 2:S0003-4975(23)00569-6. doi: 10.1016/j.athoracsur.2023.04.043. Online ahead of print.

Up to an Hour of Donor Resuscitation Does Not Affect Pediatric Heart Transplantation Survival.

Kulshrestha K(1), Greenberg JW(2), Guzman-Gomez AM(2), Kennedy JT 3rd(2), Hossain MM(2), Zhang Y(2), Zafar F(2), Morales DLS(2).

ABSTRACT

BACKGROUND: In pediatric heart transplantation, surgeons historically avoided donors requiring cardiopulmonary resuscitation (CPR), despite evidence that donor CPR does not change post-transplant survival (PTS). The authors sought to determine whether CPR duration impacts PTS. METHODS: All potential brain dead donors age <40 years from 2001-2021 consented for heart procurement were identified in the United Network for Organ Sharing database (n=54,671). Organ

acceptance was compared by CPR administration and duration. All recipients age <18 years with donor CPR data were then identified (n=5,680). Survival analyses were conducted using increasing CPR duration as a cutpoint to identify the shortest duration beyond which PTS worsened. Additional analyses were performed with multivariable and cubic spline regression. RESULTS: Fifty-one percent of donors (28,012/54,671) received CPR. Donor acceptance was lower after CPR (54 vs. 66%; p<0.001), and across successive quartiles of CPR duration (p<0.001). Of the recipients, 48% (2,753/5,680) belonged to the no-CPR group and 52% (2,927/5,680) belonged to the CPR group. Kaplan-Meier analyses of CPR duration attained significance at 55 minutes, after which PTS worsened (11.1 vs. 9.2 years, p=0.025). There was no survival difference between the CPR≤55 minutes and no-CPR groups (11.1 vs 11.2 years, p=0.571). A cubic spline regression model confirmed PTS increased above 55 minutes of CPR. A Cox regression demonstrated that CPR>55 minutes predicted worsened PTS relative to no CPR (HR=1.51, p=0.007) but CPR≤55 minutes did not (HR=1.01, p=0.864). CONCLUSIONS: Donor CPR decreases organ acceptance for transplantation; however, shorter durations (≤55 minutes) had equivalent PTS when controlling for other risk factors.

FEEDBACK

No articles identified.

DRUGS

1. J Clin Med. 2023 Jun 2;12(11):3817. doi: 10.3390/jcm12113817.

Outcome of Out-of-Hospital Cardiac Arrest Patients Stratified by Pre-Clinical Loading with Aspirin and Heparin: A Retrospective Cohort Analysis.

Macherey-Meyer S(1), Heyne S(1), Meertens MM(1), Braumann S(1), Niessen SF(1), Baldus S(1), Lee S(1), Adler C(1).

ABSTRACT

Background: Out-of-hospital cardiac arrest (OHCA) has a high prevalence of obstructive coronary artery disease and total coronary occlusion. Consequently, these patients are frequently loaded with antiplatelets and anticoagulants before hospital arrival. However, OHCA patients have multiple non-cardiac causes and high susceptibility for bleeding. In brief, there is a gap in the evidence for loading in OHCA patients. Objective: The current analysis stratified the outcome of patients with OHCA according to pre-clinical loading. Material and Methods: In a retrospective analysis of an all-comer OHCA registry, patients were stratified by loading with aspirin (ASA) and unfractionated heparin (UFH). Bleeding rate, survival to hospital discharge and favorable neurological outcomes were measured. Results: Overall, 272 patients were included, of whom 142 were loaded. Acute coronary syndrome was diagnosed in 103 patients. One-third of STEMIs were not loaded. Conversely, 54% with OHCA from non-ischemic causes were pretreated. Loading was associated with increased survival to hospital discharge (56.3 vs. 40.3%, p = 0.008) and a more favorable neurological outcome (80.7 vs. 62.6% p = 0.003). Prevalence of bleeding was comparable (26.8 vs. 31.5%, p = 0.740). Conclusions: Pre-clinical loading did not increase bleeding rates and was associated with favorable survival. Overtreatment of OHCA with non-ischemic origin, but also undertreatment of STEMI-OHCA were documented. Loading without definite diagnosis of sustained ischemia is debatable in the absence of reliable randomized controlled data.

TRAUMA

No articles identified.

VENTILATION

1. Curr Pediatr Rev. 2023 Jun 7. doi: 10.2174/1573396320666230607115318. Online ahead of print.
Are we compressing and ventilating effectively during cardiopulmonary resuscitation?
Hon KL(1)(2), Cheung ST(1), Tan YW(1), Leung KKY(1), Ho A(1), Chan HB(1), Qian SY(3).
NO ABSTRACT AVAILABLE

CERERBRAL MONITORING

1. BMJ Open. 2023 Jun 2;13(6):e071166. doi: 10.1136/bmjopen-2022-071166.
CT perfusion for Assessment of poor Neurological outcome in Comatose Cardiac Arrest Patients (CANCCAP): protocol for a prospective study.
Alcock S(1), Singh S(1), Wiens EJ(2), Singh N(3), Ande SR(1), Lampron K(1), Huang B(1), Kirkpatrick I(1), Trivedi A(4), Schaffer SA(5), Shankar JS(6)(7).
ABSTRACT
INTRODUCTION: Cardiac arrest remains one of the most common causes of death with the majority occurring outside of hospitals (out of hospital cardiac arrest). Despite advancements in resuscitation management, approximately 50% of comatose cardiac arrest patients (CCAP) will suffer a severe unsurvivable brain injury. To assess brain injury, a neurological examination is conducted, however, its reliability in predicting outcomes in the first days following cardiac arrest is limited. Non-contrast CT is the most employed scan to assess hypoxic changes, even though it is not sensitive to early hypoxic-ischaemic changes in the brain. CT perfusion (CTP) has shown high sensitivity and specificity in brain death patients, although its use in predicting poor neurological outcome in CCAP has not yet been explored. The purpose of this study is to validate CTP for predicting poor neurological outcome (modified Rankin scale, mRS≥4) at hospital discharge in CCAP. METHODS AND ANALYSIS: The CT Perfusion for Assessment of poor Neurological outcome in Comatose Cardiac Arrest Patients study is a prospective cohort study funded by the Manitoba Medical Research Foundation. Newly admitted CCAP receiving standard Targeted Temperature Management are eligible. Patients undergo a CTP at the same time as the admission standard of care head CT. Admission CTP findings will be compared with the reference standard of an accepted bedside clinical assessment at the time of admission. Deferred consent will be used. The primary outcome is a binary outcome of good neurological status, defined as mRs<4 or poor neurological status (mRs≥4) at hospital discharge. A total of 90 patients will be enrolled.

ULTRASOUND AND CPR

No articles identified.

ORGANISATION AND TRAINING

1. Prim Health Care Res Dev. 2023 Jun 8;24:e42. doi: 10.1017/S1463423623000282.
Educating sports people about CPR and first aid in general practice: the Savtember project.
Maury A(1)(2), Buet M(2), Rossignol E(1), Chapron A(1)(2).

ABSTRACT
AIM: During an exercise-related sudden cardiac arrest, bystander automated external defibrillator use occurred in a median of 31%. The present study conducted in France evaluated the feasibility and impact of a brief intervention by general practitioners (GPs) to increase awareness about first aid/CPR training among amateur sportspeople. METHODS: In 2018, 49 French GPs proposed a brief intervention to all patients who attended a consultation in order to obtain a medical certificate attesting their fitness to participate in sports. The brief intervention included two questions (Have you been trained in first aid? Would you like to attend a first aid course?) and a flyer on first aid. The GPs' opinion of the feasibility of the brief intervention was evaluated during a subsequent interview (primary objective). The percentage of sportspeople who started a first aid/CPR course within three months was used as a measure of the effectiveness of the brief intervention (secondary objective). FINDINGS: Among 929 sportspeople, 37% were interested in first aid training and received the flyer (4% of these started a training course within three months of the brief intervention, a training rate that was 10 times greater than among the general French population), 56% were already trained, and 7% were not interested. All GPs found the brief intervention feasible and fast (<3 min for 80% of GPs). We conclude the brief intervention to promote first aid/CPR awareness is easy to use and may be an effective although limited means of promoting CPR training. It opens a previously unexplored avenue for GP involvement in promoting training.

2. Front Cardiovasc Med. 2023 May 22;10:1192795. doi: 10.3389/fcvm.2023.1192795. eCollection 2023.

Characteristics of out-of-hospital cardiac arrest patients in Riyadh province, Saudi Arabia: a cross-sectional study.

Almiro A(#)(1)(2), AlQassab O(#)(2), Alzeidan R(2), Binhaddab AS(3), Alkhorisi AM(4), Almalki HA(4), Ghouthalsayd MA(3), Kashour T(2), Hersi A(2), Alqarawi W(2)(5).

ABSTRACT
INTRODUCTION: Little work has been done on out-of-hospital cardiac arrest (OHCA) in Saudi Arabia. Our goal is to report the characteristics of OHCA patients and predictors of bystander cardiopulmonary resuscitation (CPR). MATERIALS AND METHODS: This cross-sectional study utilized data from the Saudi Red Crescent Authority (SRCA), a governmental emergency medical service (EMS). A standardized data collection form based on the "Utstein-style" guidelines was developed. Data were retrieved from the electronic patient care reports that SRCA providers fill out for every case. OHCA cases that were attended by SRCA in Riyadh province between June 1st, 2020 and May 31st, 2021 were included. Multivariate regression analysis was performed to assess independent predictors of bystander CPR. RESULTS: A total of 1,023 OHCA cases were included. The mean age was 57.2 (±22.6). 95.7% (979/1,023) of cases were adults and 65.2% (667/1,023) were males. Home was the most common location of OHCA [784/1,011 (77.5%)]. The initial recorded rhythm was shockable in 131/742 (17.7%). The EMS mean response time was 15.9 min (±11.1). Bystander CPR was performed in 130/1,023 (12.7%) and was more commonly performed in children as compared to adults [12/44 (27.3%) vs. 118/979 (12.1%), p = 0.003]. Independent predictors of bystander CPR were being a child (OR = 3.26, 95% CI [1.21-8.82], p = 0.02) and having OHCA in a healthcare institution (OR = 6.35, 95% CI [2.15-18.72], p = 0.001). CONCLUSION: Our study reported the characteristics of OHCA cases in Saudi Arabia using EMS data. We observed young age at presentation, low rates of bystander CPR, and long response time. These characteristics are distinctly different from other countries and call for urgent attention to OHCA care in Saudi Arabia. Lastly, being a child and having OHCA in a healthcare institution were found to be independent predictors of bystander CPR.

3. Sports Health. 2023 Jun 5:19417381231175384. doi: 10.1177/19417381231175384. Online ahead of print.

Research on the Rescue Time of the Taiwan Marathon Emergency Medical Service System Between 2013 and 2021.

Hsia TI(1), Wei CY(1), Fann LY(2)(3)(4), Kao WF(5), Chien WC(1)(2), Huang HB(1)(2).

ABSTRACT

BACKGROUND: While there are several studies on marathon injuries worldwide, there are no related studies on the Taipei Marathon regarding the rescue time of onsite injury cases, the incidence of out-of-hospital cardiac arrest (OHCA) cases, and the success rate of recovery of spontaneous circulation (ROSC). This study aims to fill that gap. HYPOTHESIS: The rescue time onsite of contact injury cases was in the prime time for lifesaving. STUDY DESIGN: Descriptive epidemiological study. LEVEL OF EVIDENCE: Level 2c. METHODS: This is a retrospective study of numerical and timeflow data using descriptive statistics. Our data were obtained from records of the Taipei Marathon from 2013 to 2021. These included (1) notification data, (2) the time record of the emergency care personnel in contact with patients, (3) incidence of OHCA, (4) the success rate of ROSC, (5) the location of occurrence of OHCA, and (6) emergency medical service capacity and configuration. RESULTS: The average time taken for first contact was 1.56 minutes in OHCA cases, and the total incidence rate of OHCA in 9 years was 4 people per 100,000 people, with a 100% ROSC success rate. Further, the location of OHCA cases was mostly in Q4 of the race (66.67%), followed by Q3 (22.22%) and Q2 (1.11%). The average number of emergency care personnel per marathon was 78, spread across 6 rescue and 6 medical stations and equipped with 8 ambulances and 35 automated external defibrillators. CONCLUSION: Shortening the arrival time of medical personnel to the scene and implementing a complete chain of survival can improve survival rates. Other ways to provide faster and more timely emergency rescue services require further study. CLINICAL RELEVANCE: Contact with patients as soon as possible, timely implementation of cardiopulmonary resuscitation, and use of an automated external defibrillator are the basic requirements of the chain of survival theory.

4. Australas Emerg Care. 2023 Jun;26(2):153-157. doi: 10.1016/j.auec.2022.10.001. Epub 2022 Oct 12.

Effect of a specific training intervention with task interruptions on the quality of simulated advance life support: A randomized multi centered controlled simulation study.

Truchot J(1), Michelet D(2), Philippon AL(3), Drummond D(4), Freund Y(3), Plaisance P(5).

ABSTRACT

PURPOSE: Task interruptions (TI) are frequent disturbances for emergency professionals performing advanced life support (ALS). The aim of our study was to evaluate a specific training intervention with TI on the quality of simulated ALS. METHODS: During this multi centered randomized controlled trial, each team included one resident, one nurse and one emergency physician. The teams were randomized for the nature of their training session: control (without interruption) or intervention (with TI). The primary outcome was non-technical skills assessed with the TEAM score. We also measured the no flow time, the Cardiff score and chest compression depth and rate. RESULTS: On a total of 21 included teams, 11 were randomized to a control training session and 10 to the specific TI training. During training, teams' characteristics and skills were similar between the two groups. During the evaluation session, the TEAM score was not different between groups: median score for control group 33,5 vs 31,5 for intervention group. We also report similar no flow time and Cardiff score. CONCLUSION: In this simulated ALS study, a specific training intervention with TI did not improve technical and non-technical skills. Further research is required to limit the impact of TI in emergency settings.

5. PLoS One. 2023 Jun 8;18(6):e0286047. doi: 10.1371/journal.pone.0286047. eCollection 2023.
Impact of emergency medical service with advanced life support training for adults with out-of-hospital cardiac arrest in the Republic of Korea: A retrospective multicenter study.
Ahn JY(1), Ryoo HW(1)(2), Jung H(1), Ro YS(2)(3), Park JH(2)(3).
ABSTRACT
Prehospital advanced life support (ALS) has been offered in many countries for patients experiencing out-of-hospital cardiac arrest (OHCA); however, its effectiveness remains unclear. This study aimed to determine the impact of emergency medical service (EMS) with ALS training as a nationwide pilot project for adults with OHCA in the Republic of Korea. This retrospective multicenter observational study was conducted between July 2019 and December 2020 using the Korean Cardiac Arrest Research Consortium registry. The patients were categorized into an intervention group that received EMS with ALS training and a control group that did not receive EMS with ALS training. Conditional logistic regression analysis was performed using matched data to compare clinical outcomes between the two groups. Compared with the control group, the intervention group had a 75.6%) and a higher rate of undergoing endotracheal intubation (21.7% vs. 6.1%, P < 0.001). In addition, the intervention group was administered more intravenous epinephrine (59.8% vs. 14.2%, P < 0.001) and used mechanical chest compression devices more frequently in prehospital settings than the control group (59.0% vs. 23.8%, P < 0.001). Based on the results of multivariable conditional logistic regression analysis, survival to hospital discharge (odds ratio: 0.48, 95% confidence interval: 0.27-0.87) of the intervention group was significantly lower than that of the control group; however, good neurological outcome was not significantly different between the two groups. In this study, survival to hospital discharge was worse in patients with OHCA who received EMS with ALS training than in those who did not.

6. Resusc Plus. 2023 Jun 1;14:100403. doi: 10.1016/j.resplu.2023.100403. eCollection 2023 Jun.
Perceived threats and challenges experienced by first responders during their mission for an out-of-hospital cardiac arrest.
Baldi E(1)(2), D'Alto A(3), Benvenuti C(1), Caputo ML(1)(4), Cresta R(1)(5), Cianella R(5), Auricchio A(1)(3)(4).
ABSTRACT
AIM: No study has systematically captured the perceived threat, discomfort or issues experienced by First Responders (FRs). We aimed to report the FRs' experience during a mission for an out-of-hospital cardiac arrest (OHCA) in a ten-year span. METHODS: We collected all the 40-items questionnaires filled out by the FRs dispatched in Ticino Region (Switzerland) from 01/10/2010 to 31/12/2020. We compared results between FRs alerted by SMS or APP and between professional and citizen FRs. RESULTS: 3391 FRs filled the questionnaire. The OHCA information was considered complete more frequently by FRs alerted by APP (85.6% vs 76.8%, p < 0.001), but a challenge in reaching the location was more frequent (15.5% vs 11.4%, p < 0.001), mainly due to wrong GPS coordinate. The FRs initiated/participated in resuscitation in 64.6% and used an AED in 31.9% of OHCAs, without issue in 97.9%. FRs reported a very high-level of satisfaction (97%) in EMS collaboration, but one-third didn't have the possibility to debrief. Citizen FRs used AED more frequently than professional FRs (34.6% vs 30.7%, p < 0.01), but experienced more often difficulties in performing CPR (2.6% vs 1.2%, p = 0.02) and wore more in need to debrief (19.7% vs 13%, p < 0.01). CONCLUSIONS: We provide a unique picture from the FRs' point of view during a real-life OHCA reporting high-level of satisfaction, great motivation but also the need of systematic debrief. We identified areas of improvements including geolocation accuracy, further training on AED use and support program dedicated to citizen FRs.

7. Resusc Plus. 2023 Jun 1;14:100402. doi: 10.1016/j.resplu.2023.100402. eCollection 2023 Jun.
Follow-up on volunteer responders dispatched for out-of-hospital cardiac arrests: Addressing the psychological and physical impact.
Rolin Kragh A(1)(2), Tofte Gregers M(1)(2), Andelius L(1)(2), Shahriari P(1)(2), Kjærholm S(1), Korsgaard A(3), Folke F(1)(4)(2), Malta Hansen C(1)(4).
ABSTRACT
INTRODUCTION: Smartphone technology is increasingly used to engage lay people as volunteer responders in resuscitation attempts. Attention has recently been drawn to how resuscitation attempts may impact bystanders. Attempting resuscitation in out-of-hospital cardiac arrests (OHCA) may be an overwhelming experience and, in some cases, difficult to cope with. We developed a volunteer responder follow-up program to systematically measure the psychological and physical impact on volunteer responders dispatched for OHCAs. METHODS AND RESULTS: The nationwide Danish volunteer responder program dispatches volunteer responders for presumed cardiac arrests. 90 min after notification of a potential nearby cardiac arrest, all volunteer responders receive a survey, and are asked to self-report their mental state of mind after the event. The volunteer responders are also asked to disclose any physical injury they sustained in relation to the event. Volunteer responders who report severe mental effects are offered a defusing conversation by a trained nurse. Between 1 September 2017 and 31 December 2022, the Danish volunteer responder program has alerted 177,866 volunteer responders for 10,819 presumed cardiac arrest alerts. Of 177,866 alerted volunteers responders, 62,711 accepted the alarm. In the same period, 7,317 cancelled their registration. From January 2019 to 31 December 31 2022, a total of 535 volunteer responders were offered a defusing consultation. CONCLUSION: The Danish volunteer responder follow-up program is carried out to assess the psychological and physical risks of responding to a suspected OHCA. We suggest a survey-based method for systematic screening of volunteer responders that allow volunteer responders to report any physical injury or need of psychological follow-up. The person providing defusing should be a trained and experienced healthcare professional.

8. J Clin Nurs. 2023 Jun 9. doi: 10.1111/jocn.16788. Online ahead of print.
Experiences of family-witnessed cardiopulmonary resuscitation in hospital and its impact on life: An interview study with cardiac arrest survivors and their family members.
Waldemar A(1), Strömberg A(2), Thylén I(2), Bremer A(3).
ABSTRACT
AIM: To explore experiences of cardiac arrest in-hospital and the impact on life for the patient who suffered the arrest and the family member who witnessed the resuscitation. BACKGROUND: Guidelines advocate that the family should be offered the option to be present during resuscitation, but little is known about family-witnessed cardiopulmonary resuscitation in hospital and the impact on the patient and their family. DESIGN: A qualitative design consisting of joint in-depth interviews with patients and family members. METHODS: Family interviews were conducted with seven patients and their eight corresponding family members (aged 19-85 years) 4-10 months after a family-witnessed in-hospital cardiac arrest. Data were analysed using interpretative phenomeno-logical analysis. The study followed the guidelines outlined in the consolidated criteria for reporting qualitative research (COREQ) checklist. RESULTS: The participants felt insignificant and abandoned following the in-hospital cardiac arrest. Surviving patients and their close family members felt excluded, alone and abandoned throughout the care process; relationships, emotions and daily life were affected and gave rise to existential distress. Three themes and eight subordinate themes were identified: (1) the intrusion of death-powerless in the face of the fragility of life, highlights what it is like to suffer a cardiac arrest and to cope with an immediate threat to life; (2) being totally exposed-

feeling vulnerable in the care relationship, describes how a lack of care from healthcare staff damaged trust; (3) learning to live again-making sense of an existential threat, pertaining to the family's reactions to a difficult event that impacts relationships but also leads to a greater appreciation of life and a positive view of the future. CONCLUSION: Surviving and witnessing a cardiac arrest in-hospital is a critical event for everyone involved. Patients and family members are vulnerable in this situation and need to be seen and heard, both in the hospital and after hospital discharge. Consequently, healthcare staff need to show compassion and attend to the needs of the family, which involves continually assessing how family members are coping during the process, and providing support and information during and after resuscitation. RELEVANCE TO CLINICAL PRACTICE: It is important to provide support to family members who witness the resuscitation of a loved one in-hospital. Structured follow-up care is crucial for cardiac arrest survivors and their families. To promote person-centred care, nurses need interprofessional training on how to support family members during resuscitation, and follow-up care focusing on providing resources for multiple challenges faced by survivors (emotional, cognitive, physical) and families (emotional) is needed. PATIENT OR PUBLIC CONTRIBUTION: In-hospital cardiac arrest patients and family members were involved when designing the study.

9. AEM Educ Train. 2023 Jun 7;7(3):e10880. doi: 10.1002/aet2.10880. eCollection 2023 Jun.
The impact of a smartphone-based cognitive aid on clinical performance during cardiac arrest simulations: A randomized controlled trial.
Brophy SL(1)(2), McCue MR(1), Reel RM(1), Jones TD(1)(2), Dias RD(3)(4).
ABSTRACT
OBJECTIVES: In-hospital cardiac arrests are common and associated with high mortality. Smartphone applications offer quick access to algorithms and timers but often lack real-time guidance. This study assesses the impact of the Code Blue Leader application on the performance of providers leading cardiac arrest simulations. METHODS: This open-label randomized controlled trial included Advanced Cardiac Life Support (ACLS)-trained medical doctors (MD) and registered nurses (RN). Participants were randomized to lead the same ACLS simulation with or without the app. The primary outcome, "performance score," was assessed by a trained rater using a validated ACLS scoring system. Secondary outcomes included percentage of critical actions performed, number of incorrect actions, and chest compression fraction (percentage of time spent performing chest compressions). A sample size of 30 participants was calculated to detect a difference of 20% at the 0.05 alpha level with 90% power. RESULTS: Fifteen MDs and 15 RNs underwent stratified randomization. The median (interquartile range) performance score in the app group was 95.3% (93.0%-100.0%) compared to 81.4% (60.5%-88.4%) in the control group, demonstrating an effect size of r = 0.69 (Z = -3.78, r = 0.69, p = 0.0002). The percentage of critical actions performed in the app group was 100% (96.2%-100.0%) compared to 85.0% (74.1%-92.4%) in the control group. The number of incorrect actions performed in the app group was 1 (1) compared to 4 (3-5) in the control group. Chest compression fraction in the app group was 75.5% (73.0%-84.0%) compared to 75.0% (72.0%-85.0%) in the control group. CONCLUSIONS: The Code Blue Leader smartphone app significantly improved the performance of ACLS-trained providers in cardiac arrest simulations.

POST-CARDIAC ARREST TREATMENTS

1. Ann Intensive Care. 2023 Jun 9;13(1):49. doi: 10.1186/s13613-023-01143-8.
Factors associated with circulatory death after out-of-hospital cardiac arrest: a population-based cluster analysis.

Binois Y(1)(2), Renaudier M(1)(2), Dumas F(1)(2)(3), Youssfi Y(2)(4), Beganton F(1)(2), Jost D(1)(2)(5), Lamhaut L(1)(2)(6), Marijon E(1)(2)(7), Jouven X(1)(2)(7), Cariou A(1)(8)(2)(9), Bougouin W(10)(11)(12)(13); Sudden-Death-Expertise-Center investigators.

ABSTRACT

BACKGROUND: Out-of-hospital cardiac arrest (OHCA) is a common cause of death. Early circulatory failure is the most common reason for death within the first 48 h. This study in intensive care unit (ICU) patients with OHCA was designed to identify and characterize clusters based on clinical features and to determine the frequency of death from refractory postresuscitation shock (RPRS) in each cluster. METHODS: We retrospectively identified adults admitted alive to ICUs after OHCA in 2011-2018 and recorded in a prospective registry for the Paris region (France). We identified patient clusters by performing an unsupervised hierarchical cluster analysis (without mode of death among the variables) based on Utstein clinical and laboratory variables. For each cluster, we estimated the hazard ratio (HRs) for RPRS. RESULTS: Of the 4445 included patients, 1468 (33%) were discharged alive from the ICU and 2977 (67%) died in the ICU. We identified four clusters: initial shockable rhythm with short low-flow time (cluster 1), initial non-shockable rhythm with usual absence of ST-segment elevation (cluster 2), initial non-shockable rhythm with long no-flow time (cluster 3), and long low-flow time with high epinephrine dose (cluster 4). RPRS was significantly associated with this last cluster (HR, 5.51; 95% confidence interval 4.51-6.74). CONCLUSIONS: We identified patient clusters based on Utstein criteria, and one cluster was strongly associated with RPRS. This result may help to make decisions about using specific treatments after OHCA.

2. Resuscitation. 2023 Jun 7:109862. doi: 10.1016/j.resuscitation.2023.109862. Online ahead of print.

Higher versus lower blood pressure targets after cardiac arrest: systematic review with individual patient data meta-analysis.

Niemelä V(1), Siddiqui F(2), Ameloot K(3), Reinikainen M(4), Grand J(5), Hästbacka J(6), Hassager C(5), Kjaergard J(5), Åneman A(7), Tiainen M(8), Nielsen N(9), Harboe Olsen M(10), Kamp Jorgensen C(11), Juul Petersen J(2), Dankiewicz J(12), Saxena M(13), Jakobsen JC(11), Skrifvars MB(14).

ABSTRACT

PURPOSE: Guidelines recommend targeting mean arterial pressure (MAP) > 65 mmHg in patients after cardiac arrest (CA). Recent trials have studied the effects of targeting a higher MAP as compared to a lower MAP after CA. We performed a systematic review and individual patient data meta-analysis to investigate the effects of higher versus lower MAP targets on patient outcome. METHOD: We searched the Cochrane Central Register of Controlled Trials, MEDLINE, Embase, LILACS, BIOSIS, CINAHL, Scopus, the Web of Science Core Collection, ClinicalTrials.gov, the World Health Organization International Clinical Trials Registry, Google Scholar and the Turning Research into Practice database to identify trials randomizing patients to higher (≥ 71 mmHg) or lower (≤70 mmHg) MAP targets after CA and resuscitation. We used the Cochrane Risk of Bias tool, version 2 (RoB 2) to assess for risk of bias. The primary outcomes were 180-day all-cause mortality and poor neurologic recovery defined by a modified Rankin score of 4-6 or a cerebral performance category score of 3-5. RESULTS: Four eligible clinical trials were identified, randomizing a total of 1,087 patients. All the included trials were assessed as having a low risk for bias. The risk ratio (RR) with 95% confidence interval for 180-day all-cause mortality for a higher versus a lower MAP target was 1.08 (0.92-1.26) and for poor neurologic recovery 1.01 (0.86-1.19). Trial sequential analysis showed that a 25% or higher treatment effect, i.e., RR<0.75, can be excluded. No difference in serious adverse events was found between the higher and lower MAP groups. CONCLUSIONS: Targeting a higher MAP compared to a lower MAP is unlikely to reduce mortality or improve neurologic recovery after CA. Only a large treatment effect above 25% (RR<0.75) could be excluded, and future studies are needed to investigate if relevant but lower treatment effect exists. Targeting a higher MAP was not associated with any increase in adverse effects.

3. Neurocrit Care. 2023 Jun;38(3):533-563. doi: 10.1007/s12028-023-01688-3. Epub 2023 Mar 22.
Guidelines for Neuroprognostication in Comatose Adult Survivors of Cardiac Arrest.
Rajajee V(1), Muehlschlegel S(2), Wartenberg KE(3), Alexander SA(4), Busl KM(5), Chou SHY(6), Creutzfeldt CJ(7), Fontaine GV(8), Fried H(9), Hocker SE(10), Hwang DY(11), Kim KS(12), Madzar D(13), Mahanes D(14), Mainali S(15), Meixensberger J(16), Montellano F(17), Sakowitz OW(18), Weimar C(19)(20), Westermaier T(21), Varelas PN(22).

ABSTRACT
BACKGROUND: Among cardiac arrest survivors, about half remain comatose 72 h following return of spontaneous circulation (ROSC). Prognostication of poor neurological outcome in this population may result in withdrawal of life-sustaining therapy and death. The objective of this article is to provide recommendations on the reliability of select clinical predictors that serve as the basis of neuroprognostication and provide guidance to clinicians counseling surrogates of comatose cardiac arrest survivors. METHODS: A narrative systematic review was completed using Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology. Candidate predictors, which included clinical variables and prediction models, were selected based on clinical relevance and the presence of an appropriate body of evidence. The Population, Intervention, Comparator, Outcome, Timing, Setting (PICOTS) question was framed as follows: "When counseling surrogates of comatose adult survivors of cardiac arrest, should [predictor, with time of assessment if appropriate] be considered a reliable predictor of poor functional outcome assessed at 3 months or later?" Additional full-text screening criteria were used to exclude small and lower-quality studies. Following construction of the evidence profile and summary of findings, recommendations were based on four GRADE criteria: quality of evidence, balance of desirable and undesirable consequences, values and preferences, and resource use. In addition, good practice recommendations addressed essential principles of neuroprognostication that could not be framed in PICOTS format. RESULTS: Eleven candidate clinical variables and three prediction models were selected based on clinical relevance and the presence of an appropriate body of literature. A total of 72 articles met our eligibility criteria to guide recommendations. Good practice recommendations include waiting 72 h following ROSC/rewarming prior to neuroprognostication, avoiding sedation or other confounders, the use of multimodal assessment, and an extended period of observation for awakening in patients with an indeterminate prognosis, if consistent with goals of care. The bilateral absence of pupillary light response > 72 h from ROSC and the bilateral absence of N20 response on somatosensory evoked potential testing were identified as reliable predictors. Computed tomography or magnetic resonance imaging of the brain > 48 h from ROSC and electroencep-halography > 72 h from ROSC were identified as moderately reliable predictors. CONCLUSIONS: These guidelines provide recommendations on the reliability of predictors of poor outcome in the context of counseling surrogates of comatose survivors of cardiac arrest and suggest broad principles of neuroprognostication. Few predictors were considered reliable or moderately reliable based on the available body of evidence.

TARGETED TEMPERATURE MANAGEMENT

1. Neurocrit Care. 2023 Jun;38(3):676-687. doi: 10.1007/s12028-022-01636-7. Epub 2022 Nov 15.
Factors Associated with Early Withdrawal of Life-Sustaining Treatments After Out-of-Hospital Cardiac Arrest: A Subanalysis of a Randomized Trial of Prehospital Therapeutic Hypothermia.
Wahlster S(#)(1)(2)(3), Danielson K(#)(4), Craft L(5), Matin N(6), Town JA(7), Srinivasan V(8), Schubert G(6), Carlbom D(7), Kim F(9), Johnson NJ(#)(7)(8), Tirschwell D(#)(6).

ABSTRACT
BACKGROUND: The objective of this study is to describe incidence and factors associated with early withdrawal of life-sustaining therapies based on presumed poor neurologic prognosis (WLST-N) and practices around multimodal prognostication after out-of-hospital cardiac arrest (OHCA). METHODS:

We performed a subanalysis of a randomized controlled trial assessing prehospital therapeutic hypothermia in adult patients admitted to nine hospitals in King County with nontraumatic OHCA between 2007 and 2012. Patients who underwent tracheal intubation and were unconscious following return of spontaneous circulation were included. Our outcomes were (1) incidence of early WLST-N (WLST-N within < 72 h from return of spontaneous circulation), (2) factors associated with early WLST-N compared with patients who remained comatose at 72 h without WLST-N, (3) institutional variation in early WLST-N, (4) use of multimodal prognostication, and (5) use of sedative medications in patients with early WLST-N. Analysis included descriptive statistics and multivariable logistic regression. RESULTS: We included 1,040 patients (mean age was 65 years, 37% were female, 41% were White, and 44% presented with arrest due to ventricular fibrillation) admitted to nine hospitals. Early WLST-N accounted for 24% (n = 154) of patient deaths and occurred in half (51%) of patients with WLST-N. Factors associated with early WLST-N in multivariate regressions were older age (odds ratio [OR] 1.02, 95% confidence interval [CI]: 1.01-1.03), preexisting do-not-attempt-resuscitation orders (OR 4.67, 95% CI: 1.55-14.01), bilateral absent pupillary reflexes (OR 2.4, 95% CI: 1.42-4.10), and lack of neurological consultation (OR 2.60, 95% CI: 1.52-4.46). The proportion of patients with early WLST-N among all OHCA admissions ranged from 19-60% between institutions. A head computed tomography scan was obtained in 54% (n = 84) of patients with early WLST-N; 22% (n = 34) and 5% (n = 8) underwent ≥ 1 and ≥ 2 additional prognostic tests, respectively. Prognostic tests were more frequently performed when neurological consultation occurred. Most patients received sedating medications (90%) within 24 h before early WLST-N; the median time from last sedation to early WLST-N was 4.2 h (interquartile range 0.4-15). CONCLUSIONS: Nearly one quarter of deaths after OHCA were due to early WLST-N. The presence of concerning neurological examination findings appeared to impact early WLST-N decisions, even though these are not fully reliable in this time frame. Lack of neurological consultation was associated with early WLST-N and resulted in underuse of guideline-concordant multimodal prognostication. Sedating medications were often coadministered prior to early WLST-N and may have further confounded the neurological examination. Standardizing prognostication, restricting early WLST-N, and a multidisciplinary approach including neurological consultation might improve outcomes after OHCA.

ELECTROPHYSIOLOGY AND DEFIBRILLATION

No articles identified.

PEDIATRICS AND CHILDREN

1. Rev Port Cardiol. 2023 Jun;42(6):601. doi: 10.1016/j.repc.2023.03.015. Epub 2023 Mar 21.
Out-of-hospital cardiac arrest in children. [Article in English, Portuguese]
Areias JC(1).
NO ABSTRACT AVAILABLE

EXTRACORPOREAL LIFE SUPPORT

1. Am J Emerg Med. 2023 Jul;69:58-64. doi: 10.1016/j.ajem.2023.03.047. Epub 2023 Mar 31.
Are serial neuron-specific enolase levels associated with neurologic outcome of ECPR patients: A retrospective multicenter observational study.
Kim HB(1), Yang JH(2), Lee YH(3).
ABSTRACT

AIM OF THE STUDY: This study aims to evaluate whether neuron-specific enolase (NSE) level at 48 h after extracorporeal cardiopulmonary resuscitation (ECPR) is associated with neurologic outcomes at 6 months after hospital discharge. METHODS: This was a retrospective, multicenter, observational study of adult patients who received ECPR between May 2010 and December 2016. In the two hospitals involved in this study, NSE measurements were a routine part of the protocol for patients who received ECPR. Serial NSE levels were measured in all patients with ECPR. NSE levels were measured 24, 48, and 72 h after ECPR. The primary outcome was Cerebral Performance Categories (CPC) scale at 6 months after hospital discharge according to NSE levels at 48 h after ECPR. RESULTS: At follow-up 6 months after hospital discharge, favorable neurologic outcomes of CPC 1 or 2 were observed in 9 (36.0%) of the 25 patients, and poor neurologic outcomes of CPC 3, 4, or 5 were observed in 16 (64%) patients. NSE levels at 24 h in the favorable and poor neurologic outcome groups were 58.3 (52.5-73.2) μg/L and 64.2 (37.9-89.8) μg/L, respectively ($p = 0.95$). NSE levels at 48 h in the favorable and poor neurologic outcome groups were 52.1 (22.3-64.9) μg/L and 302.0 (62.8-360.2) μg/L, respectively ($p = 0.01$). NSE levels at 72 h were 37.2 (12.5-53.2) μg/L and 240.9 (75.3-370.0) μg/L, respectively ($p < 0.01$). In receiver operating characteristic (ROC) curve analysis, as the predictor of poor outcome, the optimal cut-off value for NSE level at 48 h was 140.5 μg/L, and the area under the curve (AUC) was 0.844 ($p < 0.01$). The optimal cut-off NSE level at 72 h was 53.2 μg/L, and the AUC was 0.897 ($p < 0.01$). CONCLUSIONS: NSE level at 72 h displayed the highest association with neurologic outcome after ECPR, and NSE level at 48 h was also associated with neurologic outcome after ECPR.

2. J Cardiothorac Vasc Anesth. 2023 Jul;37(7):1201-1207. doi: 10.1053/j.jvca.2023.02.003. Epub 2023 Feb 22.

Heparin Loading Dose in Patients Undergoing Extracorporeal Cardiopulmonary Resuscitation.

Zhang L(1), Liu W(1), Liu J(1), Sun P(1), Liu L(1), Liu Z(1), Wang X(2).

ABSTRACT

OBJECTIVE: To study the differences in hemorrhagic and embolic complications among extracorporeal cardiopulmonary resuscitation (ECPR) patients who received and did not receive a loading dose of heparin. DESIGN: This study is a controlled before-after monocentric retrospective study. SETTING: The emergency department of the Aerospace Center Hospital (ASCH). PARTICIPANTS: The authors studied a total of 28 patients who, after a cardiac arrest, underwent ECPR in the emergency department of the ASCH from January 2018 to May 2022. INTERVENTIONS: The authors compared the hemorrhagic and embolic complications and prognosis of the 2 groups based on whether they received a loading dose of heparin anticoagulation therapy before catheterization (a loading-dose group and a non-loading dose- group). MEASUREMENTS AND MAIN RESULTS: There were 12 patients in the loading-dose group and 16 in the nonloading-dose group. There was no statistically significant difference in age, sex, underlying diseases, causes of cardiac arrest, and hypoperfusion time between the 2 groups. The incidence of hemorrhagic complications was 75% in the loading-dose group and 67.5% in the nonloading-dose group. The difference between the 2 groups was not statistically significant ($p > 0.05$). The incidence of life-threatening massive hemorrhage in the loading-dose group was 50%, and in the nonloading-dose group, it was 12.5%. The difference between the 2 groups was statistically significant ($p = 0.03$). The incidence of embolic complications in the loading-dose group and nonloading-dose group was 8.3% and 12.5%, respectively, and the difference between the 2 groups was not statistically significant ($p > 0.05$). The survival rates of the 2 groups were 8.3% v 18.8%, respectively, and the difference between the 2 groups was not statistically significant ($p > 0.05$). CONCLUSION: In conclusion, in the authors' study of patients undergoing ECPR, administering a loading dose of heparin was associated with an increased risk of early fatal hemorrhage. However, stopping this loading dose did not raise the risk of embolic complications. It also did not lower the risk of total hemorrhage and transfusion.

EXPERIMENTAL RESEARCH

1. Cells. 2023 Jun 5;12(11):1548. doi: 10.3390/cells12111548.

Multi-Drug Cocktail Therapy Improves Survival and Neurological Function after Asphyxial Cardiac Arrest in Rodents.

Choudhary RC(1)(2)(3), Shoaib M(1)(2)(4), Hayashida K(1)(2)(3), Yin T(1)(2)(3), Miyara SJ(1)(2)(5), d'Abramo C(6), Heuser WG(3), Shinozaki K(1)(2)(3), Kim N(1)(4), Takegawa R(1)(2)(3), Nishikimi M(1)(2)(3), Li T(7), Owens C(7), Molmenti EP(8), He M(2), Vanpatten S(2), Al-Abed Y(2)(9), Kim J(1)(2)(3)(4)(9), Becker LB(1)(2)(3)(4)(9)(10).

ABSTRACT

BACKGROUND: Cardiac arrest (CA) can lead to neuronal degeneration and death through various pathways, including oxidative, inflammatory, and metabolic stress. However, current neuro-protective drug therapies will typically target only one of these pathways, and most single drug attempts to correct the multiple dysregulated metabolic pathways elicited following cardiac arrest have failed to demonstrate clear benefit. Many scientists have opined on the need for novel, multidimensional approaches to the multiple metabolic disturbances after cardiac arrest. In the current study, we have developed a therapeutic cocktail that includes ten drugs capable of targeting multiple pathways of ischemia-reperfusion injury after CA. We then evaluated its effectiveness in improving neurologically favorable survival through a randomized, blind, and placebo-controlled study in rats subjected to 12 min of asphyxial CA, a severe injury model. RESULTS: 14 rats were given the cocktail and 14 received the vehicle after resuscitation. At 72 h post-resuscitation, the survival rate was 78.6% among cocktail-treated rats, which was significantly higher than the 28.6% survival rate among vehicle-treated rats (log-rank test; $p = 0.006$). Moreover, in cocktail-treated rats, neurological deficit scores were also improved. These survival and neurological function data suggest that our multi-drug cocktail may be a potential post-CA therapy that deserves clinical translation. CONCLUSIONS: Our findings demonstrate that, with its ability to target multiple damaging pathways, a multi-drug therapeutic cocktail offers promise both as a conceptual advance and as a specific multi-drug formulation capable of combatting neuronal degeneration and death following cardiac arrest. Clinical implementation of this therapy may improve neurologically favorable survival rates and neurological deficits in patients suffering from cardiac arrest.

2. Heliyon. 2023 May 19;9(6):e16247. doi: 10.1016/j.heliyon.2023.e16247. eCollection 2023 Jun.

Insight into the mechanisms of therapeutic hypothermia for asphyxia cardiac arrest using a comprehensive approach of GC-MS/MS and UPLC-Q-TOF-MS/MS based on serum metabolomics.

Zhang Y(1), Feng Y(1)(2), Chen F(3), Yu J(3), Liu X(3), Liu Y(3), Ouyang J(1)(2), Liang M(1)(2), Zhu Y(3), Zou L(1).

ABSTRACT

Cardiac arrest (CA) is a severe worldwide health problem. Therapeutic hypothermia is widely used to reduce the cardiac injury and improve the neurological outcomes after CA. However, a few studies have reported the changes of serum metabolic characteristics after CA. The healthy male New Zealand Rabbits successfully resuscitated from 10-min asphyxia-induced CA were divided randomly into the normothermia (NT) group and mild therapeutic hypothermia (HT) group. The sham group underwent sham-operation. Survival was recorded and neurological deficit score (NDS) was assessed. The serum non-targeted metabolomics were detected using ultra-high-performance liquid chromatography-quadrupole time-of-flight tandem mass spectrometry (UPLC-Q-TOF-MS/MS) and gas chromatography tandem mass spectrometry (GC-MS/MS) at 15 min, 3 h, 6 h and 24 h after return of spontaneous circulation (ROSC). Our study showed that the heart rate (HR) significantly slowed down during 0.5-6 h post ROSC, consistent with the decreasing trend of body temperature in the HT group. Compared with the NT group, the levels of Lac and PCO2 at 24 h post ROSC were

lower, while a significant increase in PO2 level at 24 h post ROSC was observed in the HT group. The survival rate of the HT group was significantly higher than that of the NT group, and NDS scores were remarkably increased at 24 h post ROSC in the NT group. Significant differences in metabolic profiles at 15 min, 3 h, 6 h and 24 h post ROSC were observed among the Sham, NT and HT groups. The differential metabolites detected by UPLC-Q-TOF-MS/MS and GC-MS/MS were screened for further study between every two groups (NT vs sham, HT vs sham and HT vs NT) at 15 min, 3 h, 6 h and 24 h post ROSC. Phenylalanine metabolism, alanine, aspartate and glutamate metabolism and tricarboxylic acid (TCA) cycle were enriched in NT vs sham, HT vs sham and HT vs NT respectively. Our study demonstrated that therapeutic hypothermia improves the survival and neurological outcomes in rabbit model of cardiac arrest, and firstly represents the dynamic metabolic changes in the hypothermia therapy for CA by comprehensive UPLC-Q-TOF-MS/MS- and GC-MS/MS-based metabolomics.

CASE REPORTS

1. Clin Auton Res. 2023 Jun 7. doi: 10.1007/s10286-023-00953-x. Online ahead of print.
A case of recurring perioperative circulatory arrest: mind the autonomic nervous system.
Limper U(1)(2), Keipke D(3), Lindenbeck L(3), Lanz F(4), Kramer C(4), Meissner A(4), Wappler F(3), Annecke T(3).

ABSTRACT
We report the case of an elderly woman who developed recurring episodes of unexplained cardiocirculatory arrest. The index event appeared during surgery to fix a fracture of the ankle and consisted of bradypnea, hypotension and asystole, coherent with a Bezold-Jarisch-like cardioprotective reflex. Classical signs of acute myocardial infarction were absent. Yet, occlusion of the right coronary artery (RCA) was observed and successfully revascularized, whereupon circulatory arrests vanished. We discuss several differential diagnoses. Unexplainable circulatory failure, with sinus bradycardia and arterial hypotension, despite lack of ECG signs of ischemia or significant troponin levels, suggest the action of cardioprotective reflexes of the autonomic nervous system. Coronary artery disease is a common source. Attention to cardioprotective reflexes should be taken in the case of unexplained cardiac arrest without overt reasons. We recommend performing coronary angiography to exclude significant coronary stenosis.

2. Cureus. 2023 May 4;15(5):e38525. doi: 10.7759/cureus.38525. eCollection 2023 May.
Cardiac Arrest (CA) as the Initial Presentation of Cocaine-Induced Takotsubo Cardiomyopathy (TCM): A Case Report and Review of Literature.
Almalouf C(1)(2), Hakobyan N(1), Yadav V(3), Gandhi A(1), Yadav R(1).

ABSTRACT
Cocaine is used as an illicit substance responsible for the most common cause of drug-related death. It is a stimulant that acts on the sympathetic nervous system and cardiovascular system leading to exaggerated, prolonged sympathetic activity due to the accumulation of neurotransmitters. Cardiovascular side effects of cocaine are coronary artery spasms, myocarditis, arrhythmias, and congestive heart failure. Takotsubo cardiomyopathy (TCM) is characterized by transient hypokinesis, akinesis, or dyskinesis of the left ventricle (LV) wall with or without apical involvement in the absence of obstructive coronary artery disease. Cocaine-induced TCM is an extremely rare condition emphasizing the need of its prompt diagnosis by the physicians. We present a case report of a 54-year-old male, brought to the emergency department (ED) after an out-of-hospital cardiac arrest (CA), found to have TCM in the setting of cocaine use. Clinicians need to understand the association

between cocaine use and the development of TCM as cardiomyopathy of this type can result in complete remission after discontinuing the offending agent.

3. J Am Coll Cardiol. 2023 May 31:S0735-1097(23)05521-3. doi: 10.1016/j.jacc.2023.04.038. Online ahead of print.

Venoarterial Extracorporeal Membrane Oxygenation After Autologous Stem Cell Transplantation With Pancytopenia: JACC Patient Care Pathways.

Howick V JF(1), Rezkalla JA(2), Tilbury T(2), Mankad SV(2), Bennett CE(2), Herrmann J(2), Barsness G(2), Ansell SM(3), Read MD(4).

ABSTRACT

Venoarterial extracorporeal membrane oxygenation (VA-ECMO) provides temporary mechanical circulatory support and simultaneous extracorporeal gas exchange for acute cardiorespiratory failure. By providing circulatory support, VA-ECMO gives treatments time to reach optimal efficacy or may be used as a bridge to a more durable mechanical solution for patients with acute cardio-pulmonary failure. It is commonly used when a readily reversible etiology of decompensation is identified with very strict inclusion criteria for extracorporeal cardiopulmonary resuscitation use. We present a unique case in which VA-ECMO/extracorporeal cardiopulmonary resuscitation was used after cardiac arrest with pulseless electrical activity in a patient with recurrent lymphoma of the left thigh with recent autologous stem cell transplant.

4. Cureus. 2023 May 8;15(5):e38708. doi: 10.7759/cureus.38708. eCollection 2023 May.

Shark Fin Occlusive Myocardial Infarction ECG Pattern Post-cardiac Arrest Misinterpreted As Ventricular Tachycardia.

Escabi-Mendoza J(1), Diaz-Rodriguez PE(1), Silva-Cantillo RD(1).

ABSTRACT

In addition to the well-known convex ST-segment elevation myocardial infarction (STEMI) pattern associated with acute occlusive myocardial infarction (OMI), there are other cases that are recognized as OMI without fulfilling the established characteristic STEMI criteria. Over one-fourth of the patients initially classified as having non-STEMI can be re-classified as having OMI by recognizing other STEMI equivalent patterns. We report a case of a 79-year-old man with multiple comorbidities who was brought to the ED by paramedics with a two-hour history of ongoing chest pain. During transport, the patient suffered a cardiac arrest associated with ventricular fibrillation (VF) that required electric defibrillation and active cardiopulmonary resuscitation. Upon ED arrival, the patient was unresponsive, with a heart rate of 150 beats/min and ECG evidence of wide-QRS tachycardia that was misinterpreted as ventricular tachycardia (VT). He was further managed with intravenous amiodarone, mechanical ventilation, sedation, and unsuccessful defibrillation therapy. Upon persistence of the wide-QRS tachycardia and clinical instability, the cardiology team was emergently consulted for bedside assistance. On further review of the ECG, a shark fin (SF) OMI pattern was identified, indicative of an extensive anterolateral OMI. A bedside echocardiogram revealed a severe left ventricular systolic dysfunction with marked anterolateral and apical akinesia. The patient underwent a successful percutaneous coronary intervention (PCI) to an ostial left anterior descending (LAD) culprit occlusion with hemodynamic support but ultimately died due to multiorgan failure and refractory ventricular arrhythmias. This case illustrates an infrequent OMI presentation (<1.5%) formed by the fusion of the QRS, ST-segment elevation, and T-wave resulting in a wide triangular waveform, giving the appearance of an SF that can also potentially lead to ECG misinterpretation as VT. It also highlights the importance of recognizing STEMI-equivalent ECG patterns to avoid delays in reperfusion therapy. The SF OMI pattern has also been associated with a large amount of ischemic myocardium (such as with left main or proximal LAD occlusion) with a

higher mortality risk from cardiogenic shock and/or VF. This high-risk OMI pattern should lead to a more definite reperfusion treatment, such as primary PCI and the possible need for backup hemodynamic support.

5. Cureus. 2023 May 7;15(5):e38669. doi: 10.7759/cureus.38669. eCollection 2023 May.
Cardiac Arrest Associated With Psilocybin Use and Hereditary Hemochromatosis.
Bae S(1), Vaysblat M(2), Bae E(3), Dejanovic I(4), Pierce M(5).
ABSTRACT
Recreational drug use is a significant public health concern in various countries. It is well understood that usage of psychedelics/hallucinogens, such as lysergic acid diethylamide (LSD), ecstasy, phencyclidine (PCP), and psilocybin-containing mushrooms, has increased significantly over the last few decades, particularly in adolescents and young adults, yet the effects of these recreational drugs are poorly understood. Psilocybin has recently been studied as an alternative to traditional antidepressant therapies with potentially benign side effects. Here, we present the case of a 48-year-old male with a past medical history of attention-deficit/hyperactivity disorder on lisdex-amfetamine who presented after a syncopal episode witnessed by his wife at home. He was found to be in ventricular fibrillation and subsequently had an extensive workup with cardiac magnetic resonance imaging (MRI), ischemic evaluation, and electrophysiology, which were unrevealing. He then received an automatic implantable cardiac defibrillator and was incidentally found to have hereditary hemochromatosis on outpatient follow-up. His polypharmacy may have potentially led to catecholamine release, leading to ventricular arrhythmia.

6. Anaesth Rep. 2023 Jun 1;11(1):e12233. doi: 10.1002/anr3.12233. eCollection 2023 Jan-Jun.
Cardiac arrest following sugammadex administration.
Pereira AV(1), Oliveira RR(1), Esteves C(1), Coutinho MA(1).
ABSTRACT
A 68-year-old man underwent elective surgical repair of an abdominal wall hernia under general anaesthesia. The operation required muscle relaxation, for which we used rocuronium. Following completion of surgery, 180 mg sugammadex was administered intravenously. Shortly afterwards, the patient became severely bradycardic with hypotension, refractory to treatment with ephedrine. This progressed to a pulseless electrical activity cardiac arrest. After 4 min of cardiopulmonary resuscitation, there was return of spontaneous circulation and, following a period of haemodynamic stability in which general anaesthesia was maintained, the patient emerged from anaesthesia without incident. He remained haemodynamically stable until discharge. Post-resuscitation investigations including the serum tryptase level were unremarkable except for a mild respiratory acidosis and slightly elevated D-dimers. Sugammadex-induced bradycardia has previously been described, but its mechanism remains unknown. We believe that sugammadex was the cause of cardiac arrest in this case because of the timing and sequence of events, the evolution to pulseless electric activity and the relatively uneventful post-arrest clinical course. We hope that our report will help to promote awareness about this potential complication of a now commonly-used drug.

7. Ther Hypothermia Temp Manag. 2023 Jun;13(2):87-89. doi: 10.1089/ther.2022.0064. Epub 2023 Feb 3.
A Case of Sudden Cardiac Arrest After Brainstem Infarction.
Suzuki T(1), Hifumi T(1), Goto M(1), Isokawa S(1), Otani N(1).
ABSTRACT
Research on the causes of sudden cardiac arrest (CA) after ischemic stroke, especially disruption of the autonomic nervous system's central control, has recently focused more on the widespread

cortical and subcortical network than on autonomic circuits at the spinal and brainstem level. However, no clinical case of sudden CA requiring cardiopulmonary resuscitation (CPR) after brainstem infarction has been reported. We report a case of a 78-year-old woman who died suddenly from a brainstem infarction. Her husband heard a falling sound and found her unresponsive and lying with agonal breathing. The initial cardiac rhythm was pulseless electrical activity confirmed by emergency medical technicians. Recovery of spontaneous circulation was achieved after CPR. Basilar artery occlusion was shown on computed tomography, but no other findings that could have caused CA were found. Targeted temperature management was initiated, but she died on hospital day 22. Brainstem infarction may cause sudden CA; therefore, definitive treatment may achieve better outcomes.