This week's PubMed 14th – 20th August 2022: articles of interest n = 38

CPR AND COVID-19

1. Front Med (Lausanne). 2022 Aug 1;9:941980. doi: 10.3389/fmed.2022.941980. eCollection 2022.
Influence of the domestic COVID-19 pandemic on the pediatric emergency department.
Chen YJ(1), Chen CY(2), Lee EP(3)(4), Huang WY(1), Wu HP(4)(5).

ABSTRACT
OBJECTIVES: After the coronavirus disease 2019 (COVID-19) pandemic emerged, there has been a substantial decline in emergency department (ED) visits. However, the impact of the pandemic on pediatric ED (PED) visits has not been well discussed. This study aimed to compare the epidemiology and clinical characteristics of PED visits before and after the time of the COVID-19 outbreak.
METHODS: Data of pediatric patients admitted to the PED between February 2019 and January 2021 were retrospectively collected. All patients were divided into two groups: 1 year before the COVID-19 pandemic (group 1) and 1 year after the COVID-19 outbreak (group 2). Basic demographics, clinical characteristics, triage levels, categories of diagnosis at PED, disposition, and hospitalization rates (wards and intensive care units) were further analyzed and compared between the two groups.
RESULTS: During the study period, 48,146 pediatric patients were enrolled (30,823 in group 1, and 17,323 in group 2). PED visits represented a 43.8% annual decline. The most common diseases in the PED in group 1 were infectious diseases, whereas digestive system diseases were the most common diseases in group 2 (both $P < 0.001$). In group 2, shorter PED observational time, longer hospital stay, and higher admission rates were noted compared to those in group 1 (all $P < 0.001$). CONCLUSION: During the COVID-19 pandemic, the proportion of respiratory system diseases and infectious diseases sharply decreased in the PED, whereas the proportion of digestive system diseases relatively increased. The COVID-19 pandemic has impacted the nature of PED visits and we should pay more attention on digestive system diseases and the rates of out-of-hospital cardiac arrest and overall mortality.

2. Cureus. 2022 Aug 9;14(8):e27823. doi: 10.7759/cureus.27823. eCollection 2022 Aug.
Personal Protective Equipment Efficiency in Healthcare Emergencies: A Single-Center Experience.
Goraya H(1), Meena N(1), Jagana R(1).

ABSTRACT
Coronavirus disease 2019 (COVID-19) has dramatically shifted the healthcare landscape since 2020. Measures against it includes universal masking in the healthcare areas and the community, viral testing before aerosolizing procedures, and ambulatory elective surgical procedures. Some hospitals have had mandated viral testing policies even before admission to the hospital. Healthcare workers (HCWs) have been cautiously modifying all pertinent practices to avoid the transmission of the virus. Personal protective equipment (PPE), including gowns, gloves, eye protection, and properly fitted N95 respirator or powered air-purifying respirators (PAPR) while treating the suspected and confirmed COVID-19 patients were made mandatory. Similarly, we changed our aerosol-generating procedures (AGPs) protocols based on available limited data. We amended our approach to in-hospital cardiopulmonary resuscitation (basic life support (BLS)/advanced cardiovascular life support (ACLS)), given the risk of aerosol generation and transmission during the process. This article shares our experience and outcomes of PPE use in healthcare emergencies at our tertiary care academic center.

3. Resuscitation. 2022 Sep;178:55-62. doi: 10.1016/j.resuscitation.2022.07.018. Epub 2022 Jul 19.

Predicting neurological outcomes after in-hospital cardiac arrests for patients with Coronavirus Disease 2019.

Mayampurath A(1), Bashiri F(2), Hagopian R(3), Venable L(4), Carey K(4), Edelson D(4), Churpek M(5); American Heart Association's Get With The Guidelines®-Resuscitation Investigators.

ABSTRACT

BACKGROUND: Machine learning models are more accurate than standard tools for predicting neurological outcomes in patients resuscitated after cardiac arrest. However, their accuracy in patients with Coronavirus Disease 2019 (COVID-19) is unknown. Therefore, we compared their performance in a cohort of cardiac arrest patients with COVID-19. METHODS: We conducted a retrospective analysis of resuscitation survivors in the Get With The Guidelines®-Resuscitation (GWTG-R) COVID-19 registry between February 2020 and May 2021. The primary outcome was a favorable neurological outcome, indicated by a discharge Cerebral Performance Category score ≤ 2. Pre- and peri-arrest variables were used as predictors. We applied our published logistic regression, neural network, and gradient boosted machine models developed in patients without COVID-19 to the COVID-19 cohort. We also updated the neural network model using transfer learning. Performance was compared between models and the Cardiac Arrest Survival Post-Resuscitation In-Hospital (CASPRI) score. RESULTS: Among the 4,125 patients with COVID-19 included in the analysis, 484 (12 %) patients survived with favorable neurological outcomes. The gradient boosted machine, trained on non-COVID-19 patients was the best performing model for predicting neurological outcomes in COVID-19 patients, significantly better than the CASPRI score (c-statistic: 0.75 vs 0.67, $P < 0.001$). While calibration improved for the neural network with transfer learning, it did not surpass the gradient boosted machine in terms of discrimination. CONCLUSION: Our gradient boosted machine model developed in non-COVID patients had high discrimination and adequate calibration in COVID-19 resuscitation survivors and may provide clinicians with important information for these patients.

CPR/MECHANICAL CHEST COMPRESSION

No articles identified.

REGISTRIES, REVIEWS AND EDITORIALS

1. Prehosp Emerg Care. 2022 Aug 17:1-12. doi: 10.1080/10903127.2022.2113189. Online ahead of print.

Utilization and Effect of Direct Medical Oversight During Out-of-Hospital Cardiac Arrest.

Zimmerman TM(1), Neth MR(1), Tanski ME(1), Chess L(1), Thompson K(1), Jui J(1), Sahni R(1), Daya MR(1), Lupton JR(1).

ABSTRACT

Study Objective: Direct medical oversight (DMO), where emergency medical services (EMS) clinicians contact a physician for real-time medical direction, is used by many EMS systems across the United States. Our objective was to characterize the recommendations made by DMO during out-of-hospital cardiac arrests (OHCA) and to determine their effect on EMS transport decisions and patient outcomes. Methods: This is a secondary analysis of DMO call recordings from OHCA cases in the Portland, Oregon metropolitan area from January 1, 2018 to February 28, 2021. Data extracted from the audio recordings were linked to OHCA cases in the Portland Cardiac Arrest Epidemiologic Registry (PDX Epistry). The primary outcomes are recommendations made by DMO: transport, continued field resuscitation, or termination of resuscitation (TOR). Secondary outcomes include

EMS transport decisions, survival to hospital admission, and survival to hospital discharge. We used descriptive statistics, unpaired t-tests, and chi-square tests as appropriate for data analysis. Results: There were 239 OHCA cases for which DMO was contacted by EMS. The median time from EMS arrival to DMO contact was 25.6 minutes, and EMS requested TOR for 72.0% of patients. Compared to patients where EMS requested further treatment advice, patients for whom EMS requested TOR had poor prognostic signs including older age, asystole as an initial rhythm, and lower rates of transient return of spontaneous circulation prior to DMO call compared with cases where EMS did not request TOR. DMO recommended transport, continued field resuscitation, or TOR in 21.8%, 18.0%, and 60.2% of patients, respectively. Of the 239 patients, 59 (24.7%) were ultimately transported by EMS to the hospital, 14 (5.9%) survived to admission, and only 1 patient (0.4%) survived to hospital discharge and had an acceptable neurologic outcome (Cerebral Performance Category score of 2).Conclusions: Patients for whom EMS contacts DMO for further treatment advice or requesting field TOR after prolonged OHCA resuscitation have poor outcomes, even when DMO recommends transport or further resuscitation, and may represent opportunities to reduce unnecessary DMO contact or patient transports. More research is needed to determine which OHCA patients benefit from DMO contact.

2. Clin Epidemiol. 2022 Aug 8;14:949-957. doi: 10.2147/CLEP.S374788. eCollection 2022.
The National Danish Cardiac Arrest Registry for Out-of-Hospital Cardiac Arrest - A Registry in Transformation.
Jensen TW(1)(2), Blomberg SN(1)(2), Folke F(1)(2)(3), Mikkelsen S(4)(5), Rostgaard-Knudsen M(6), Juelsgaard P(7), Christensen EF(6)(8), Torp-Pedersen C(9)(10), Lippert F(1)(2), Christensen HC(1)(2)(11)(12).
ABSTRACT
AIM OF THE DATABASE: The aim of the Danish Cardiac Arrest Registry is to monitor the quality of prehospital cardiac arrest treatment, evaluate initiatives regarding prehospital treatment of cardiac arrest, and facilitate research. STUDY POPULATION: All patients with prehospital cardiac arrest in Denmark treated by the emergency medical services in whom resuscitation or defibrillation has been attempted. MAIN VARIABLES: The Danish Cardiac Arrest Register records descriptive and qualitative variables as outlined in the "Utstein" template for reporting out-of-hospital-cardiac arrest. Main variables include whether the case was witnessed, whether the cardiac arrest was electrocardiographically monitored, the timing of cardiopulmonary resuscitation, and the timing of the first analysis of the cardiac rhythm. The outcome measures are the status of the patient at handover to the hospital, return of spontaneous circulation, and 30-day survival after event. DATABASE STATUS: The Danish Cardiac Arrest Registry was established in June 2001, and all Danish emergency medical services are reporting to the database. CONCLUSION: The Danish Cardiac Arrest Registry is among the oldest Danish national clinical registries, with a high quality of clinical data and coverage. This registry provides the prerequisite for all research on out-of-hospital cardiac arrest research in Denmark and is essential for monitoring and improving the quality of care for patients suffering from out-of-hospital cardiac arrest.

3. Resuscitation. 2022 Sep;178:40-42. doi: 10.1016/j.resuscitation.2022.07.008. Epub 2022 Jul 14.
Measure to improve: Quality improvement review with implementation of telephone CPR performance metrics targets greater bystander CPR.
Seaman K(1), Bichmann A(2).
NO ABSTRACT AVAILABLE

IN-HOSPITAL CARDIAC ARREST

1. Clin Res Cardiol. 2022 Aug 17. doi: 10.1007/s00392-022-02084-1. Online ahead of print.
Clinical characteristics, causes and predictors of outcomes in patients with in-hospital cardiac arrest: results from the SURVIVE-ARREST study.
Hannen LEM(#)(1), Toprak B(#)(1)(2), Weimann J(1), Mahmoodi B(1), Fluschnik N(1), Schrage B(1)(2), Roedl K(3), Söffker G(3), Kluge S(3), Issleib M(4), Blankenberg S(1)(2), Kirchhof P(1)(2)(5), Clemmensen P(1)(2)(6), Sinning C(1)(2)(7), Zengin-Sahm E(#)(1)(7), Becher PM(#)(8)(9).
ABSTRACT
INTRODUCTION: In-hospital cardiac arrest (IHCA) is acutely life-threatening and remains associated with high mortality and morbidity. Identifying predictors of mortality after IHCA would help to guide acute therapy. METHODS: We determined patient characteristics and independent predictors of 30-day in-hospital mortality, neurological outcome, and discharge/referral pathways in patients experiencing IHCA in a large tertiary care hospital between January 2014 and April 2017. Multivariable Cox regression model was fitted to assess predictors of outcomes. RESULTS: A total of 368 patients with IHCA were analysed (median age 73 years (interquartile range 65-78), 123 (33.4%) women). Most patients (45.9%) had an initial non-shockable rhythm and shockable rhythms were found in 20.9%; 23.6% of patients suffered from a recurrent episode of cardiac arrest. 172/368 patients died within 30 days (46.7%). Of 196/368 patients discharged alive after IHCA, the majority (72.9%, n = 143) had a good functional neurological outcome (modified Rankin Scale ≤ 3 points). In the multivariable analysis, return of spontaneous circulation without mechanical circulatory support (hazard ratio (HR) 0.36, 95% confidence interval (CI) 0.21-0.64), invasive coronary angiography and/or percutaneous intervention (HR 0.56, 95% CI 0.34-0.92), and antibiotic therapy (HR 0.87, 95% CI 0.83-0.92) were associated with a lower risk of 30-day in hospital mortality. CONCLUSION: In the present study, IHCA was survived in ~ 50% in a tertiary care hospital, although only a minority of patients presented with shockable rhythms. The majority of IHCA survivors (~ 70%) had a good neurological outcome. Recovery of spontaneous circulation and presence of treatable acute causes of the arrest are associated with better survival. Clinical Characteristics, Causes and Predictors of Outcomes in Patients with In-Hospital Cardiac Arrest: Results from the SURVIVE-ARREST Study.

INJURIES AND CPR

No articles identified.

CAUSE OF THE ARREST

1. Resuscitation. 2022 Aug 11:S0300-9572(22)00643-8. doi: 10.1016/j.resuscitation.2022.08.008. Online ahead of print.
Use of torsades de pointes risk drugs among patients with out-of-hospital cardiac arrest and likelihood of shockable rhythm and return of spontaneous circulation: a nationwide study.
Krøll J(1), H B Jespersen C(2), Lund Kristensen S(2), Fosbøl EL(2), Emborg Vinding N(2), Lippert F(3), Kragholm K(4), Jøns C(2), Hansen SM(4), Køber L(2), Karl Jacobsen P(2), Tfelt-Hansen J(5), Weeke PE(2).
ABSTRACT
AIM: Treatment with certain drugs can augment the risk of developing malignant arrhythmias (e.g. torsades de pointes [TdP]). Hence, we examined the overall TdP risk drug use before out-of-hospital cardiac arrest (OHCA) and possible association with shockable rhythm and return of spontaneous circulation (ROSC). METHODS: Patients ≥18 years with an OHCA of cardiac origin from the Danish Cardiac Arrest Registry (2001-2014) and TdP risk drug use according to www.CredibleMeds.org were

identified. Factors associated with TdP risk drug use and secondly how use may affect shockable rhythm and ROSC were determined by multivariable logistic regression. RESULTS: We identified 27481 patients with an OHCA of cardiac origin (median age: 72 years [interquartile range 62.0, 80.0 years]). A total of 37% were in treatment with TdP risk drugs 0-30 days before OHCA compared with 33% 61-90 days before OHCA (p<0.001). Most commonly used TdP risk drugs were citalopram (36.1%) and roxithromycin (10.7%). Patients in TdP risk drug treatment were older (75 vs. 70 years) and more comorbid compared with those not in treatment. Subsequently, TdP risk drug use was associated with less likelihood of the presenting rhythm being shockable (odds ratio [OR]=0.63, 95%confidence interval [CI]:0.58-0.69) and ROSC (OR=0.73, 95%CI:0.66-0.80). CONCLUSION: TdP risk drug use increased in the time leading up to OHCA and was associated with reduced likelihood of presenting with a shockable rhythm and ROSC in an all-comer OHCA setting. However, patients in TdP risk drug treatment were older and more comorbid than patients not in treatment.

2. Can J Cardiol. 2022 Aug 17:S0828-282X(22)00507-4. doi: 10.1016/j.cjca.2022.08.005. Online ahead of print.

Understanding Etiologies of Cardiac Arrest: Seeking Definitional Clarity.

Elfassy MD(1), Randhawa VK(2), Allan KS(2), Dorian P(2).

ABSTRACT

Cardiac arrest leading to death and "sudden cardiac death" (SCD) may refer implicitly to situations where death is unexpected and primarily of cardiac cause. National and international societies have published differing definitions for the various terms relating to cardiac arrest and SCD. We highlight the controversies in defining SCD, including the lack of a universal definition, the heterogeneity in the operationalization of the term "sudden", and limitations of time-based systems of SCD classification. We discuss the importance of a standardized methodology for classifying cardiac arrest as recommended by the World Health Organization (WHO), that should include use of multisource evidence (e.g., coroner, autopsy, and toxicology reports) for confirming and/or refuting a cardiac cause of arrest. We reveal how a universal definition of SCD has been incorrectly attributed to the WHO, and how this has been perpetuated in the literature. We make the case that definitional clarity is essential to understanding epidemiology, evaluating novel treatments, forming international collaboration, and innovating public health prevention strategies. We propose a practical schema to categorize cardiac arrest events to describe and study this population more accurately.

3. Am J Cardiol. 2022 Sep 1;178:124-130. doi: 10.1016/j.amjcard.2022.05.015. Epub 2022 Jul 12.

Family History and Warning Symptoms Precede Sudden Cardiac Death in Arrhythmogenic Right Ventricular Cardiomyopathy (from a Nationwide Study in Sweden).

Delgado-Vega AM(1), Kommata V(2), Svennblad B(3), Wisten A(4), Hagström E(2), Stattin EL(5).

ABSTRACT

Arrhythmogenic right ventricular cardiomyopathy (ARVC) is an inherited cardiac disease explaining about 4% of sudden cardiac death (SCD) cases in the young in Sweden. This study aimed to describe the circumstances preceding SCD in all victims <35 years of age who received an autopsy-confirmed diagnosis of ARVC from January 1, 2000, to December 31, 2010, in Sweden (n = 22). Data on demographics, medical and family history, circumstances of death, and anatomopathological findings were collected from several compulsory national health registries, clinical records, family interviews, and autopsy reports. Registry-based data were compared with age-matched, gender-matched, and geographically-matched population controls. During the 6 months preceding SCD, 15 cases (68%) had experienced symptoms of cardiac origin, mainly syncope or presyncope (54%) and chest discomfort (27%). A total of 8 cases (36%) had sought medical care because of cardiac

symptoms. The occurrence of hospital visits was significantly increased in cases compared with controls (odds ratio 4.62 [1.35 to 15.8]). A total of 10 cases (45%) had a family history of SCD. The most common activity at the time of death was exercise (41%). A complete cardiac investigation was seldom performed; only 1 case was diagnosed with ARVC before death. In conclusion, in this nationwide study, we observed a high prevalence of symptoms of cardiac origin, healthcare use, and family history of SCD preceding SCD in the young caused by ARVC. Increased awareness of these warning signals in younger patients is critical to improving risk stratification and early disease detection.

END-TIDAL CO_2

No articles identified.

ORGAN DONATION

1. Scand J Trauma Resusc Emerg Med. 2022 Aug 17;30(1):50. doi: 10.1186/s13049-022-01037-x.
An increased potential for organ donors may be found among patients with out-of-hospital cardiac arrest.
Rasmussen MA(1)(2), Moen HS(2)(3), Milling L(1)(4), Munthe S(2)(5)(6), Rosenlund C(6), Poulsen FR(2)(5), Brøchner AC(1)(3)(4), Mikkelsen S(7)(8).

ABSTRACT
INTRODUCTION: A prehospital system where obvious futile cases may be terminated prehospitally by physicians may reduce unethical treatment of dying patients. Withholding treatment in futile cases may seem ethically sound but may keep dying patients from becoming organ donors. The objective of this study was to characterise the prehospital patients who underwent organ donation. The aim was to alert prehospital physicians to a potential for an increase in the organ donor pool by considering continued treatment even in some prehospital patients with obvious fatal lesions or illness. METHODS: This is a retrospective register-based study from the Region of Southern Denmark. The prehospital medical records from patients who underwent organ donation after prehospital care from 1st of January 2016-31st of December 2020 were screened for inclusion. The outcome measures were prehospital diagnosis, vital parameters, and critical interventions. RESULTS: In the five year period, one-hundred-and-fifty-one patients were entered into a donation process in the health region following prehospital care. Sixteen patients were excluded due to limitations in data availability. Of the 135 patients included, 36.3% had a stroke. 36.7% of these patients were intubated prehospitally. 15.6% had subarachnoideal haemorrhage. 66.7% of these were intubated prehospitally. 10.4% suffered from head trauma. 64.3% of these patients were intubated at the scene. In 21.5% of the patients, the prehospitally assigned tentative diagnosis was missing or included a diverse spectrum of medical and surgical emergencies. Twenty-two patients (16.3%) were resuscitated from cardiac arrest. 81.8% were intubated at the scene. CONCLUSION: The majority of the patients who became organ donors presented prehospitally with intracranial pathology. However, 30% of the patients that later underwent an organ donation process had other prehospital diagnoses. Among these, one patient in six had out-of-hospital cardiac arrest. Termination of treatment in patients with cardiac arrest is not uncommon in physician-manned prehospital emergency medical systems. An organ donation process cannot be initiated prehospitally but can be shut down if treatment is withheld or terminated. We contend that there is a potential for enlarging the donor pool if the decision processes in out-of-hospital cardiac arrest include considerations concerning future procurement of organ donors.

FEEDBACK

No articles identified.

DRUGS

1. Resuscitation. 2022 Aug 12:S0300-9572(22)00641-4. doi: 10.1016/j.resuscitation.2022.08.007. Online ahead of print.
Aortic occlusion during cardiac arrest - mechanical adrenaline?
Rødseth Brede J(1).
NO ABSTRACT AVAILABLE

2. JAMA Netw Open. 2022 Aug 1;5(8):e2226200. doi: 10.1001/jamanetworkopen.2022.26200.
Epinephrine Dosing and Post-Cardiac Arrest Targeted Temperature Management-Injury Severity After Resuscitation.
Zaitseva D(1), Abella BS(1).
NO ABSTRACT AVAILABLE

3. JAMA Netw Open. 2022 Aug 1;5(8):e2226191. doi: 10.1001/jamanetworkopen.2022.26191.
Analysis of Epinephrine Dose, Targeted Temperature Management, and Neurologic and Survival Outcomes Among Adults With Out-of-Hospital Cardiac Arrest.
Yang BY(1), Bulger N(1), Chocron R(2), Counts CR(1), Drucker C(3), Yin L(3), Parayil M(3), Johnson NJ(1)(4), Sotoodehenia N(5), Kudenchuk PJ(5), Sayre MR(1), Rea TD(3)(6).
ABSTRACT
IMPORTANCE: Epinephrine improves return of spontaneous circulation after out-of-hospital cardiac arrest (OHCA). These beneficial cardiac effects do not directly translate to better neurologic outcomes, possibly because of epinephrine-induced microvascular effects that produce critical brain ischemia. OBJECTIVE: To examine whether targeted temperature management (TTM) modifies the adverse association between increasing prehospital epinephrine dose and neurologically favorable survival. DESIGN, SETTING, AND PARTICIPANTS: This retrospective cohort study assessed 14 612 adults from Seattle and King County, Washington, with nontraumatic OHCA between January 1, 2008, and December 31, 2018, and included those who achieved return of spontaneous circulation and were unconscious at hospital admission. Data analysis was performed from April 2021 to May 2022. EXPOSURES: Epinephrine dose and TTM during prehospital resuscitation. MAIN OUTCOMES AND MEASURES: Favorable neurologic survival (Cerebral Performance Category [CPC] 1 or 2) and survival to hospital discharge. RESULTS: Of the 14 612 assessed adults, 5253 (median age, 63 years; IQR, 51-74 years; 3460 [65.8%] male) were eligible for the study. The median epinephrine dose was 2.0 mg (IQR, 1.0-3.0 mg); 3052 patients (58.1%) received TTM. In all, 1889 patients (36.0%) survived with CPC 1 to 2, and 2177 (41.4%) survived to discharge. Increasing doses of epinephrine were associated with a decreasing likelihood of CPC 1 to 2 (odds ratio [OR], 0.46; 95% CI 0.42-0.50 for each additional milligram of epinephrine) and survival (OR, 0.47; 95% CI, 0.43-0.51). The dose-dependent epinephrine association was modified by TTM. After adjusting for Utstein covariates, TTM was associated with a relative stepwise improvement in odds of CPC 1 to 2 (interaction OR, 1.36; 95% CI, 1.22-1.51) and survival (interaction OR, 1.37; 95% CI, 1.24-1.51). A significant interaction was also observed when the analysis was stratified according to initial rhythm among shockable OHCA and nonshockable OHCA (shockable interaction OR, 1.20; 95% CI, 1.04-1.39; and

nonshockable interaction OR, 1.24, 95% CI, 1.07-1.45). CONCLUSIONS AND RELEVANCE: This cohort study found an interaction between TTM and epinephrine dose such that the beneficial association of TTM increased with increasing epinephrine dose, suggesting that TTM may attenuate the adverse effects of higher-dose epinephrine.

TRAUMA

1. Resuscitation. 2022 Aug 12:S0300-9572(22)00640-2. doi: 10.1016/j.resuscitation.2022.08.005. Online ahead of print.

Prehospital care for traumatic cardiac arrest in the US: A cross-sectional analysis and call for a national guideline.

Ordoobadi AJ(1), Peters GA(2), MacAllister S(3), Anderson GA(1), Panchal AR(4), Cash RE(5).

ABSTRACT

AIM: We describe emergency medical services (EMS) protocols and prehospital practice patterns related to traumatic cardiac arrest (TCA) management in the U.S. METHODS: We examined EMS management of TCA by 1) assessing variability in recommended treatments in state EMS protocols for TCA and 2) analyzing EMS care using a nationwide sample of EMS activations. We included EMS activations involving TCA in adult (≥18 years) patients where resuscitation was attempted by EMS. Descriptive statistics for recommended and actual treatments were calculated and compared between blunt and penetrating trauma using $\chi 2$ and independent 2-group Mann-Whitney U tests. RESULTS: There were 35 state EMS protocols publicly available for review, of which 16 (45.7%) had a specific TCA protocol and 17 (48.5%) had a specific termination of resuscitation protocol for TCA. Recommended treatments varied. We then analyzed 9,565 EMS activations involving TCA (79.1% blunt, 20.9% penetrating). Most activations (93%) were managed by advanced life support. Return of spontaneous circulation was achieved in 25.5% of activations, and resuscitation was terminated by EMS in 26.4% of activations. Median prehospital scene time was 16.4 minutes; scene time was shorter for penetrating mechanisms than blunt (12.0 vs. 17.0 min, $p<0.001$). Endotracheal intubation was performed in 32.0% of activations, vascular access obtained in 66.6%, crystalloid fluids administered in 28.8%, and adrenaline administered in 60.1%. CONCLUSION: Actual and recommended approaches to EMS treatment of TCA vary nationally. These variations in protocols and treatments highlight the need for a standardized approach to prehospital management of TCA in the U.S.

VENTILATION

No articles identified.

CERERBRAL MONITORING

1. Ann Intensive Care. 2022 Aug 17;12(1):77. doi: 10.1186/s13613-022-01048-y.

Comparison of different clinical risk scores to predict long-term survival and neurological outcome in adults after cardiac arrest: results from a prospective cohort study.

Blatter R(#)(1), Amacher SA(#)(1)(2), Bohren C(1), Becker C(1)(3), Beck K(1), Gross S(1), Tisljar K(2), Sutter R(2)(4), Marsch S(2)(4), Hunziker S(5)(6).

ABSTRACT

BACKGROUND: Several scoring systems have been used to predict short-term outcome in patients with out-of-hospital cardiac arrest (OHCA), including the disease-specific OHCA and CAHP (Cardiac

Arrest Hospital Prognosis) scores, as well as the general severity-of-illness scores Acute Physiology and Chronic Health Evaluation II (APACHE II) and Simplified Acute Physiology Score II (SAPS II). This study aimed to assess the prognostic performance of these four scores to predict long-term outcomes (≥ 2 years) in adult cardiac arrest patients. METHODS: This is a prospective single-centre cohort study including consecutive cardiac arrest patients admitted to intensive care in a Swiss tertiary academic medical centre. The primary endpoint was 2-year mortality. Secondary endpoints were neurological outcome at 2 years post-arrest assessed by Cerebral Performance Category with CPC 1-2 defined as good and CPC 3-5 as poor neurological outcome, and 6-year mortality. RESULTS: In 415 patients admitted to intensive care, the 2-year mortality was 58.1%, with 96.7% of survivors showing good neurological outcome. The 6-year mortality was 82.5%. All four scores showed good discriminatory performance for 2-year mortality, with areas under the receiver operating characteristics curve (AUROC) of 0.82, 0.87, 0.83 and 0.81 for the OHCA, CAHP, APACHE II and SAPS II scores. The results were similar for poor neurological outcome at 2 years and 6-year mortality. CONCLUSION: This study suggests that two established cardiac arrest-specific scores and two severity-of-illness scores provide good prognostic value to predict long-term outcome after cardiac arrest and thus may help in early goals-of-care discussions.

ULTRASOUND AND CPR

No articles identified.

ORGANISATION AND TRAINING

1. Open Heart. 2022 Aug;9(2):e002044. doi: 10.1136/openhrt-2022-002044.
Individual-level income and out-of-hospital cardiac arrest survival in men and women.
van Dongen LH(1)(2), Smits RLA(3)(4), van Valkengoed IGM(3)(4), Elders P(4)(5), Tan H(6)(2)(7), Blom MT(1)(2).

ABSTRACT

OBJECTIVE: Area-level socioeconomic factors are known to associate with chances to survive out-of-hospital cardiac arrest (OHCA survival). However, the relationship between individual-level socioeconomic factors and OHCA survival in men and women is less established. This study investigated the association between individual-level income and OHCA survival in men and women, as well as its contribution to outcome variability and mediation by resuscitation characteristics. METHODS: A cross-sectional cohort study using data from a Dutch community-based OHCA registry was performed. We included 5395 patients aged≥25 years with OHCA from a presumed cardiac cause. Household income, derived from Statistics Netherlands, was stratified into quartiles. The association between survival to hospital discharge and household income was analysed using multivariable logistic regression adjusting for age, sex and resuscitation characteristics. RESULTS: Overall women had lower household income than men (median €18 567 vs €21 015), and less favourable resuscitation characteristics. Increasing household income was associated with increased OHCA survival in both men and women in a linear manner (Q4 vs Q1: OR 1.63 95% CI (1.24 to 2.16) in men, and 2.54 (1.43 to 4.48) in women). Only initial rhythm significantly changed the ORs for OHCA survival with>10% in both men and women. Household income explained 3.8% in men and 4.3% in women of the observed variance in OHCA survival. CONCLUSION: Both in men and women, higher individual-level household income was associated with a 1.2-fold to 2.5-fold increased OHCA survival to hospital discharge, but explained only little of outcome variability. A shockable initial rhythm was the most important resuscitation parameter mediating this association. Our results do

not support the need for immediate targeted interventions on actionable prehospital resuscitation care characteristics.

2. Resuscitation. 2022 Aug 12:S0300-9572(22)00642-6. doi: 10.1016/j.resuscitation.2022.08.006. Online ahead of print.
Female sex and prognosis following out-of-hospital cardiac arrest: does lack of statistical significance equal clinically insignificant?
Choi JI(1), Fordyce CB(2).
NO ABSTRACT AVAILABLE

3. Perm J. 2022 Aug 16:1-7. doi: 10.7812/TPP/22.036. Online ahead of print.
Code Status Blues: Do Legal Nudges Discourage Doctors From Ordering Do-Not-Resuscitate?
April CW(1), Morrow J(2), April MD(3).
ABSTRACT
Background Laws influence human behavior, including practitioners' behavior, and legal nudges may affect bedside patient care practices. Do-not-resuscitate (DNR) practices are one such example. Ensuring that practitioners order DNR for patients who request it is a crucial part of providing quality end-of-life care. On April 1, 2018, in the state of Texas, Senate Bill 11 (SB 11) took effect. This law did not make DNR orders illegal, but it constrained and complicated the process for issuing them. This study aimed to determine if DNR order utilization decreased after the law's implementation. Methods The authors conducted a retrospective cohort chart review of all adult patients admitted to a single academic urban tertiary care hospital in Texas before and after the state's DNR law went into effect. The authors reviewed code status orders for the 5426 sickest patients. The primary outcome is the proportion of patients who had DNR orders in effect at the end of their hospitalizations. Results Implementation of the DNR law's cumbersome documentation and witnessing requirements correlated with a substantial decline in DNR orders for patients at the highest risk of dying from chronic or severe illness. Conclusion This is the first study the authors know of that examines whether DNR usage declined after implementation of a DNR law. A troubling implication of this study is that the Texas law has had a chilling effect on doctors' willingness and ability to place medically and ethically appropriate DNR orders and has threatened the right of patients with serious illness to forgo cardiopulmonary resuscitation.

4. Am J Emerg Med. 2022 Aug 8:S0735-6757(22)00515-0. doi: 10.1016/j.ajem.2022.08.013. Online ahead of print.
Open online courses on basic life support: Availability and resuscitation guidelines compliance.
Birkun A(1), Gautam A(2), Trunkwala F(3), Böttiger BW(4).
NO ABSTRACT AVAILABLE

5. Resuscitation. 2022 Sep;178:36-37. doi: 10.1016/j.resuscitation.2022.07.014. Epub 2022 Jul 13.
Israeli dispatchers' response time to out-of-hospital cardiac arrest emergency calls.
Jaffe E(1), Bitan Y(2).
NO ABSTRACT AVAILABLE

6. Resuscitation. 2022 Sep;178:78-84. doi: 10.1016/j.resuscitation.2022.07.006. Epub 2022 Jul 8.
Utilizing community level factors to improve prediction of out of hospital cardiac arrest outcome using machine learning.
Harford S(1), Darabi H(1), Heinert S(2), Weber J(3), Campbell T(4), Kotini-Shah P(5), Markul E(6), Tataris K(4), Vanden Hoek T(5), Del Rios M(7).

ABSTRACT
OBJECTIVES: To evaluate the impact of community level information on the predictability of out-of-hospital cardiac arrest (OHCA) survival. METHODS: We used the Cardiac Arrest Registry to Enhance Survival (CARES) to geocode 9,595 Chicago incidents from 2014 to 2019 into community areas. Community variables including crime, healthcare, and economic factors from public data were merged with CARES. The merged data were used to develop ML models for OHCA survival. Models were evaluated using Area Under the Receiver Operating Characteristic curve (AUROC) and features were analyzed using SHapley Additive exPansion (SHAP) values. RESULTS: Baseline results using CARES data achieved an AUROC of 84%. The final model utilizing community variables increased the AUROC to 88%. A SHAP analysis between high and low performing community area clusters showed the high performing cluster is positively impacted by good health related features and good community safety features positively impact the low performing cluster. CONCLUSION: Utilizing community variables helps predict neurologic outcomes with better performance than only CARES data. Future studies will use this model to perform simulations to identify interventions to improve OHCA survival.

7. Resuscitation. 2022 Sep;178:109-115. doi: 10.1016/j.resuscitation.2022.06.006. Epub 2022 Jun 11.
Neonatal simulation training decreases the incidence of chest compressions in term newborns.
Schwindt EM(1), Stockenhuber R(2), Kainz T(3), Stumptner N(4), Henkel M(4), Hefler L(5), Schwindt JC(6).
ABSTRACT
AIM OF THE STUDY: To determine the effectiveness of a multidimensional neonatal simulation-based medical education training programme on direct and indirect patient outcome parameters. METHODS: This was a retrospective analytical study with a historical control group in a level II neonatal care unit (1,700 births per year). A multidimensional interdisciplinary training programme on neonatal resuscitation was implemented in 2015; pre-training (2012-2014) and post-training (2015-2019) eras were compared in terms of mortality (direct outcome) and the received intervention level immediately after birth (indirect outcome). Intervention levels were defined as follows: A) short-term non-invasive ventilation, B) prolonged non-invasive ventilation (>5 inflation breaths), C) chest compressions. RESULTS: Of 13,950 neonates born during the study period, 826 full-term newborns received one of the three intervention levels for adaptation after birth. A total of 284 (34.4%) patients received short-term non-invasive ventilation (A), 477 (57.8%) had prolonged ventilation (B), and 65 (7.9%) chest compressions (C), respectively. Comparing the pre- and post-training eras, there was no significant reduction in mortality, and no significant changes were found in groups A or B. However, the risk for chest compressions (group C) decreased significantly from 0.91% in the pre-training era to 0.20% in the post-training era ($p < 0.001$). CONCLUSION: Although there was no significant effect on neonatal mortality, regular interdisciplinary simulation training decreased the number of administered chest compressions immediately after birth. Further studies are needed to test indirect outcome-related parameters, such as frequency of chest compressions as a measure of effectiveness and impact of medical training.

8. Afr J Emerg Med. 2022 Dec;12(4):344-351. doi: 10.1016/j.afjem.2022.07.001. Epub 2022 Aug 4.
Training, knowledge, experience and perceptions regarding cardiopulmonary resuscitation of doctors at an academic hospital in central South Africa.
du Plessis N(1), Lamacraft G(1), Joubert G(2).
ABSTRACT
BACKGROUND: Cardiopulmonary resuscitation (CPR) improves immediate survival and survival to discharge in patients with cardiac arrest in hospital. Without frequent retraining in CPR, healthcare

providers may lose their skills and knowledge earlier than the recommendation of CPR retraining every two years. OBJECTIVES: To determine the competencies of doctors at an academic hospital regarding CPR training, knowledge, experience and perceptions. METHODS: A custom-designed questionnaire reviewed by CPR providers was distributed to doctors to obtain information on CPR training, exposure to and perceptions of CPR retraining, and CPR knowledge. The knowledge component of the questionnaire comprised questions on basic, advanced cardiac, paediatric, neonatal and obstetric life support. RESULTS: Of the 245 participants, 22.5% achieved competency (a mark of ≥ 80%) for the knowledge component of the questionnaire. The majority of participants had not undertaken retraining after two years, although 96.7% of participants felt that keeping up-to-date with CPR guidelines would improve patient outcomes. The most common reasons provided for not feeling confident in performing CPR were related to training. CONCLUSION: Doctors at the academic hospital in this study are currently not adequately trained in CPR, which is reflected by their lack of CPR knowledge. Lack of training seems to be the most common reason for not feeling confident, and being too busy to attend these retraining courses was reported as the most common reason. It further seems that very few of the departments have CPR training for their doctors. A regular in-hospital CPR training program may improve doctor's CPR knowledge.

POST-CARDIAC ARREST TREATMENTS

1. Resuscitation. 2022 Sep;178:63-68. doi: 10.1016/j.resuscitation.2022.07.023. Epub 2022 Jul 21.
Coronary angiographic findings for out-of-hospital cardiac arrest survivors presenting with nonshockable rhythms and no ST elevation post resuscitation.
Harhash AA(1), Kluge MA(1), Muthukrishnan A(1), Noc M(2), Radsel P(2), Jentzer JC(3), Seder DB(4), Lee K(5), Lotun K(5), Stub D(6), Hsu CH(5), Kern KB(7).
ABSTRACT
BACKGROUND: Recent guidelines suggest that coronary angiography (CAG) should be considered for out-of-hospital cardiac arrest (OHCA) survivors, including those without ST elevation (STE) and without shockable rhythms. However, there is no prospective data to support CAG for survivors with nonshockable rhythms and no STE post resuscitation. METHODS: This was a re-analysis of the PEARL study (randomized OHCA survivors without STE to early CAG versus not). Patients were subdivided by initial rhythm as nonshockable (Nsh) vs shockable (Sh). The primary outcome was coronary angiographic evidence of acute culprit lesion, with secondary outcomes being survival to hospital discharge and neurological recovery. RESULTS: The PEARL study included 99 patients with OHCA from a presumed cardiac etiology, 24 with nonshockable and 75 with shockable rhythms. There was no difference in the frequency of CAG between the two groups [71% (Nsh) and 75% (Sh); p = 0.79], presence of CAD [81% (Nsh) and 68% (sh); p = 0.37, or culprit lesions identified in each group [50% (Nsh) and 45% (Sh); p = 0.78. Nonshockable patients had worse discharge survival [33% (Nsh) vs 57% (Sh); p = 0.04] and those survived, had worse neurological recovery [30% (Nsh) vs 54% (Sh); p = 0.02] compared to shockable patients. CONCLUSIONS: OHCA survivors presenting with nonshockable rhythms and no STE post resuscitation had similar prevalence of culprit coronary lesions to those with shockable rhythms. CAG may be considered in patients with OHCA without STE regardless of initial presenting rhythm. There was no benefit of emergent CAG both in shockable and non-shockable rhythms.

TARGETED TEMPERATURE MANAGEMENT

1. Acute Crit Care. 2022 Aug 18. doi: 10.4266/acc.2022.00542. Online ahead of print.
Association between C-reactive protein-to-albumin ratio and 6-month mortality in out-of-hospital cardiac arrest.

Kim HH(1), Lee JH(1), Lee DH(1), Lee BK(2).

ABSTRACT

BACKGROUND: The inflammatory response that occurs following cardiac arrest can determine the long-term prognosis of patients who survive out-of-hospital cardiac arrest. We evaluated the correlation between C-reactive protein-to-albumin ratio (CAR) following cardiac arrest and long-term mortality. METHODS: The current retrospective observational study examined patients with post-cardiac arrest syndrome (PCAS) treated with targeted temperature management at a single tertiary care hospital. We measured CAR at four time points (at admission and then 24 hours, 48 hours, and 72 hours after) following cardiac arrest. The primary outcome was the patients' 6-month mortality. We performed multivariable and area under the receiver operating characteristic curve (AUC) analyses to investigate the relationship between CAR and 6-month mortality. RESULTS: Among the 115 patients, 52 (44.1%) died within 6 months. In the multivariable analysis, CAR at 48 hours (odds ratio [OR], 1.130; 95% confidence interval [CI], 1.027-1.244) and 72 hours (OR, 1.241; 95% CI, 1.059-1.455) after cardiac arrest was independently associated with 6-month mortality. The AUCs of CAR at admission and 24, 48, and 72 hours after cardiac arrest for predicting 6-month mortality were 0.583 (95% CI, 0.489-0.673), 0.622 (95% CI, 0.528-0.710), 0.706 (95% CI, 0.615-0.786), and 0.762 (95% CI, 0.675-0.835), respectively. CONCLUSION: CAR at 72 hours after cardiac arrest was an independent predictor for long-term mortality in patients with PCAS.

2. Cardiol J. 2022 Aug 17. doi: 10.5603/CJ.a2022.0077. Online ahead of print.

The prognostic impact of therapeutic hypothermia after a sudden cardiac arrest in the course of myocardial infarction.

Sobczyk A(1)(2), Streb W(3)(4), Świątkowski A(3), Kowalczyk J(3)(4), Kalarus Z(3)(4), Średniawa B(3)(4).

ABSTRACT

BACKGROUND: Mild therapeutic hypothermia (MTH) is one of the treatment methods recommended in post-sudden cardiac arrest (SCA) patients who remain unconscious after cardiopulmonary resuscitation. The present study aimed at assessing the prognostic impact of intravascular MTH on invasively treated patients with an acute myocardial infarction complicated by SCA. METHODS: The presented data were collected via a single-center retrospective analysis of the hospitalization and follow-up of 54 patients with post-myocardial infarction complicated by SCA. The patients were treated in the years 2014-2020 and the average follow-up period was 1141 ± 163 days. The population was divided into two groups: 28 patients treated with MTH (a therapeutic hypothermia [TH] group) and 26 patients treated without MTH (a non-TH group). RESULTS: The results indicate a trend toward improved in-hospital prognosis in the TH group, but the differences did not reach statistical significance: TH 25.0% vs. non-TH 34.5%, p = 0.554. An additional analysis of younger patients (under 60 years of age) revealed no significant differences between the TH and non-TH subgroups concerning in-hospital survival (in-hospital mortality rate: TH 6.7% vs. non-TH 30.0%, p = 0.267). Still, TH patients aged < 60 achieved a significantly better rate of follow-up survival (p = 0.041). The older (≥ 60) patient group showed no in-hospital mortality rate differences (TH 46.2% vs. non-TH 37.5%, p = 0.638). However, in-hospital bleeding frequency was significantly higher in patients aged ≥ 60 from the hypothermia group (TH 50.0% vs. non-TH 6.7%, p = 0.011). CONCLUSIONS: Intravascular MTH may improve the follow-up prognosis in patients aged < 60 with SCA in the early phase of myocardial infarction.

ELECTROPHYSIOLOGY AND DEFIBRILLATION

1. Resuscitation. 2022 Sep;178:8-9. doi: 10.1016/j.resuscitation.2022.07.001. Epub 2022 Jul 6.

Importance of proper management of automated external defibrillators.
Oh JH(1).
NO ABSTRACT AVAILABLE

2. Resuscitation. 2022 Sep;178:43-44. doi: 10.1016/j.resuscitation.2022.07.016. Epub 2022 Jul 18.
Lesson from the story of Christian Eriksen: The Revised Utstein formula of survival.
Giusti GD(1), Ramacciati N(2).
NO ABSTRACT AVAILABLE

PEDIATRICS AND CHILDREN

No articles identified.

EXTRACORPOREAL LIFE SUPPORT

1. Clin Res Cardiol. 2022 Aug 20. doi: 10.1007/s00392-022-02069-0. Online ahead of print.
Venting during venoarterial extracorporeal membrane oxygenation.
Lüsebrink E(1)(2), Binzenhöfer L(1)(2), Kellnar A(1)(2), Müller C(3), Scherer C(1)(2), Schrage B(4)(5), Joskowiak D(3), Petzold T(1)(2), Braun D(1)(2), Brunner S(1)(2), Peterss S(3), Hausleiter J(1)(2), Zimmer S(6), Born F(3), Westermann D(4)(5), Thiele H(7), Schäfer A(8), Hagl C(3), Massberg S(1)(2), Orban M(9)(10).
ABSTRACT
Cardiogenic shock and cardiac arrest contribute pre-dominantly to mortality in acute cardiovascular care. Here, veno-arterial extracorporeal membrane oxygenation (VA-ECMO) has emerged as an established therapeutic option for patients suffering from these life-threatening entities. VA-ECMO provides temporary circulatory support until causative treatments are effective and enables recovery or serves as a bridging strategy to surgical ventricular assist devices, heart transplantation or decision-making. However, in-hospital mortality rate in this treatment population is still around 60%. In the recently published ARREST trial, VA-ECMO treatment lowered mortality rate in patients with ongoing cardiac arrest due to therapy refractory ventricular fibrillation compared to standard advanced cardiac life support in selected patients. Whether VA-ECMO can reduce mortality compared to standard of care in cardiogenic shock has to be evaluated in the ongoing prospective randomized studies EURO-SHOCK (NCT03813134) and ECLS-SHOCK (NCT03637205). As an innate drawback of VA-ECMO treatment, the retrograde aortic flow could lead to an elevation of left ventricular (LV) afterload, increase in LV filling pressure, mitral regurgitation, and elevated left atrial pressure. This may compromise myocardial function and recovery, pulmonary hemodynamics-possibly with concomitant pulmonary congestion and even lung failure-and contribute to poor outcomes in a relevant proportion of treated patients. To overcome these detrimental effects, a multitude of venting strategies are currently engaged for both preventive and emergent unloading. This review aims to provide a comprehensive and structured synopsis of existing venting modalities and their specific hemodynamic characteristics. We discuss in detail the available data on outcome categories and complication rates related to the respective venting option.

EXPERIMENTAL RESEARCH

1. Mol Neurobiol. 2022 Aug 16. doi: 10.1007/s12035-022-02998-x. Online ahead of print.
Glibenclamide Directly Prevents Neuroinflammation by Targeting SUR1-TRPM4-Mediated NLRP3 Inflammasome Activation In Microglia.
He Y(#)(1), Chang Y(#)(1), Peng Y(1), Zhu J(1), Liu K(1), Chen J(1), Wu Y(1), Ji Z(1), Lin Z(1), Wang S(1), Gupta S(1), Zang N(1), Pan S(2), Huang K(3).

ABSTRACT
Glibenclamide (GLB) reduces brain edema and improves neurological outcome in animal experiments and preliminary clinical studies. Recent studies also suggested a strong anti-inflammatory effect of GLB, via inhibiting nucleotide-binding oligomerization domain-like receptor containing pyrin domain 3 (NLRP3) inflammasome activation. However, it remains unknown whether the anti-inflammatory effect of GLB is independent of its role in preventing brain edema, and how GLB inhibits the NLRP3 inflammasome is not fully understood. Sprague-Dawley male rats underwent 10-min asphyxial cardiac arrest and cardiopulmonary resuscitation or sham-operation. The Trpm4 siRNA and GLB were injected to block sulfonylurea receptor 1-transient receptor potential M4 (SUR1-TRPM4) channel in rats. Western blotting, quantitative real-time polymerase chain reaction, behavioral analysis, and histological examination were used to evaluate the role of GLB in preventing NLRP3-mediated neuroinflammation through inhibiting SUR1-TRPM4, and corresponding neuroprotective effect. To further explore the underlying mechanism, BV2 cells were subjected to lipopolysaccharides, or oxygen-glucose deprivation/reperfusion. Here, in rat model of cardiac arrest with brain edema combined with neuroinflammation, GLB significantly alleviated neurocognitive deficit and neuropathological damage, via the inhibition of microglial NLRP3 inflammasome activation by blocking SUR1-TRPM4. Of note, the above effects of GLB could be achieved by knockdown of Trpm4. In vitro under circumstance of eliminating distractions from brain edema, SUR1-TRPM4 and NLRP3 inflammasome were also activated in BV2 cells subjected to lipopolysaccharides, or oxygen-glucose deprivation/reperfusion, which could be blocked by GLB or 9-phenanthrol, a TRPM4 inhibitor. Importantly, activation of SUR1-TRPM4 in BV2 cells required the P2X7 receptor-mediated Ca2+ influx, which in turn magnified the K+ efflux via the Na+ influx-driven opening of K+ channels, leading to the NLRP3 inflammasome activation. These findings suggest that GLB has a direct anti-inflammatory neuroprotective effect independent of its role in preventing brain edema, through inhibition of SUR1-TRPM4 which amplifies K+ efflux and promotes NLRP3 inflammasome activation.

CASE REPORTS

1. Perfusion. 2022 Aug 18:2676591221122274. doi: 10.1177/02676591221122274. Online ahead of print.
Rewarming from unwitnessed hypothermic cardiac arrest with good neurological recovery using extracorporeal membrane oxygenation.
Gordon L(1)(2), Ferris J(3)(4), Pauli H(5).

ABSTRACT
A 26-year-old man, who was training in bad weather for a mountain ultramarathon, became hypothermic after running for 4 h. He deteriorated and was unable to continue. His running partner went for help. The man suffered an unwitnessed hypothermic cardiac arrest. The on-site management and evacuation are described and included the use of intermittent cardiopulmonary resuscitation and a mechanical device during transport. The patient was successfully resuscitated

and rewarmed by Extracorporeal Membrane Oxygenation (ECMO) after more than 2 h of cardiopulmonary resuscitation. After 14 h of ECMO support and five days of ventilation, the patient subsequently made a good neurological recovery. At hospital discharge, he had normal cerebral function, and an improving peripheral polyneuropathy affecting distal limbs, with paraesthesia in both feet and reduced coordination and fine motor skills in both hands.

2. A A Pract. 2022 Aug 10;16(8):e01605. doi: 10.1213/XAA.0000000000001605. eCollection 2022 Aug 1.

Lance Adams Syndrome After Hypoxic Cardiac Arrest: A Case Report.

Lim ML(1), Lim RRZ(2), Tien JC(1), Lim SZZ(3), Lee YL(1).

ABSTRACT

Lance-Adams syndrome (chronic post-hypoxic myoclonus) is a rare syndrome occurring in patients after cardiopulmonary resuscitation. Awareness of this condition is important to distinguish it from myoclonic status epilepticus, which is a poor prognostic sign. We present the case of a 32-year-old woman who developed Lance-Adams syndrome after an episode of hypoxic cardiac arrest from severe pneumonia. Brain computed tomography, magnetic resonance imaging, and an electroencephalogram were used to rule out other causes of myoclonus. In this report, we discuss the diagnosis, treatment, and prognosis of patients with Lance-Adams syndrome.

3. Korean J Anesthesiol. 2022 Aug 18. doi: 10.4097/kja.22335. Online ahead of print.

Cardiac arrest due to coronary vasospasm after sugammadex administration -A case report.

Boo KY(1), Park SH(2), Park SK(2), Na C(3), Kim HJ(2).

ABSTRACT

BACKGROUND: Sugammadex is a widely used medication for the reversal of aminosteroid neuromuscular blockades. Although sugammadex is generally regarded to be safe, concerns about the risk of serious complications have emerged. CASE: A 57-year-old man without a history of coronary disease was scheduled for general anesthesia to undergo cardiac radiofrequency catheter ablation due to symptomatic persistent atrial fibrillation and flutter. At the end of the procedure, he was given 400 mg of sugammadex. A little later, the electrocardiogram showed a sudden ST elevation on the inferior leads, followed by cardiac arrest. The urgent coronary angiography demonstrated total collapse of the right coronary artery. After repeated injections of intra-coronary nitroglycerin, the vasospasm of the right coronary artery was completely resolved. The patient recovered without sequelae and was discharged on postoperative day 5. CONCLUSIONS: Clinicians should pay close attention to the potential risk of coronary vasospasm, even cardiac arrest, after sugammadex administration.

4. J Clin Med Res. 2022 Jul;14(7):282-286. doi: 10.14740/jocmr4744. Epub 2022 Jul 29.

Negative Outcome Following Systemic Alteplase Administration Prior to Extracorporeal Membrane Oxygenation in a Kidney Transplant Patient With Cardiac Arrest: A Case Report.

Connor KA(1)(2), Falvey J(3), Rappaport S(2).

ABSTRACT

A case of a negative outcome following systemic alteplase administration prior to extracorporeal membrane oxygenation (ECMO) in a kidney transplant patient with cardiac arrest is reported. A patient status-post kidney transplantation was admitted to the surgical intensive care unit (ICU) and experienced cardiac arrest after developing sudden-onset chest pain and shortness of breath. During cardiopulmonary resuscitation, alteplase 50 mg was administered intravenous push for suspected pulmonary embolism (PE) before the patient was evaluated for and started on veno-arterial ECMO.

Within several hours, cardiopulmonary resuscitation needed to be reinitiated. Ultimately, the decision was made to cede further resuscitation efforts due to futility. A post-mortem examination included an immediate cause of death of acute myocardial infarction with extensive retroperitoneal hemorrhage. The role of ECMO is emerging in cardiac arrest, and should be considered as a management option before the administration of systemic thrombolysis in patients with increased bleeding risk.

5. Radiol Case Rep. 2022 Aug 4;17(10):3722-3726. doi: 10.1016/j.radcr.2022.07.046. eCollection 2022 Oct.

Value of dual energy CT in post resuscitation coma. Differentiating contrast retention and ischemic brain parenchyma.

Nayab A(1)(2), Wijdicks EF(3)(4), Luetmer PH(1)(2), Lehman VT(1)(2).

ABSTRACT

Applications of dual-energy computed tomography and virtual non-contrast technique in neuroimaging are still emerging. While the role of DECT in differentiating parenchymal hemorrhage and contrast media after mechanical revascularization is well recognized, the value of DECT in evaluation of brain ischemia in post resuscitation patients who have received intravenous (IV) iodinated contrast is not well documented. We present a challenging case where DECT helped explain hyperattenuation in cortical grey matter and deep grey nuclei as well as cerebellar hemispheres in a comatose patient post cardiac arrest following massive pulmonary embolism.

6. Cureus. 2022 Aug 13;14(8):e27961. doi: 10.7759/cureus.27961. eCollection 2022 Aug.

A Case of Giant Cell Arteritis Presenting As Catastrophic Posterior Circulation Stroke: A Diagnostic Dilemma.

Wong J(1), Chan S(1), Shetty A(1).

ABSTRACT

Giant cell arteritis (GCA) is an immune-mediated systemic vasculitis usually seen in the older population. We describe a case of a 75-year-old woman who presented with jaw claudication and temporal headache. A colour duplex ultrasonography and later biopsy of the temporal arteries confirmed GCA and she was commenced on oral steroids. She was subsequently readmitted with a new worsening vision of both eyes and confusion. Her brain images revealed acute bilateral vertebral artery thrombus with haemorrhagic transformation. She was loaded on intravenous steroids. The next day she developed vomiting, bilateral visual loss and a cardiac arrest from ventricular fibrillation. Following the return of spontaneous circulation, she was taken to the cardiac catheterisation laboratory for a coronary angiogram, which showed diffuse thrombus at the apical left anterior descending artery. A bedside echocardiogram revealed a sizable left ventricular thrombus. She was managed with heparin and antiplatelet therapy. This case presented a complex diagnostic dilemma to the medical team as vasculitis, atherosclerosis, and cardiac emboli could have contributed to her stroke and visual loss. This patient also had some vascular risk factors for occlusive cerebrovascular disease, potentially suggesting a clinical event with multiple aetiologies. Stroke and visual loss are rare but serious complications of GCA, which require a high index of suspicion and early treatment with corticosteroids to improve prognosis. Although a temporal artery biopsy remains to be the definitive diagnostic modality for GCA, the use of radiological investigations in the diagnosis of GCA is increasingly common. A non-invasive colour duplex ultrasonography of the temporary arteries could be used to assess GCA in highly suspected patients. Echocardiograms and contrast-enhanced body imaging should be performed in patients with suspected or established GCA to assess for secondary thromboembolic and vascular complications.

7. Perfusion. 2022 Aug 16:2676591221122355. doi: 10.1177/02676591221122355. Online ahead of print.

Venous-arterial extracorporeal membrane oxygenation support for patients poisoned by Macleaya cordata.

Chen JP(1), Huang DC(1), Jin WY(1), Xie QH(2), Zhu WL(3), Tung TH(4), Ying AF(1).

ABSTRACT

Macleaya cordata is a Chinese herbal medicine containing a variety of highly cardiotoxic alkaloids, and might result in cardiac failure. Venous-arterial Extracorporeal membrane oxygenation (VA-ECMO) could be used as a therapeutic option in patients poisoned by Macleaya cordata complicating refractory cardiogenic shock or cardiac arrest. A 60-year-old man suffered from severe arrhythmia, cardiogenic shock and cardiac arrest after consuming Macleaya cordata. The patient received VA-ECMO support in the emergency department at 5 hours after hospitalization, and was weaned from VA-ECMO on day 4, and was discharged with complete clinical improvement on Day 12. VA-ECMO is an effective method in treating cardiogenic shock or cardiac arrest induced by severe poisoning from Chinese herbal medicine. Timely and appropriate interventions with venoarterial extracorporeal membrane oxygenation devices could improve clinical outcomes in these patients.