This week's PubMed 21st – 27th May 2023: articles of interest n = 43

CPR AND COVID-19

1. Front Public Health. 2023 May 4;11:1180511. doi: 10.3389/fpubh.2023.1180511. eCollection 2023.

Comparison of out-of-hospital cardiac arrests during the COVID-19 pandemic with those before the pandemic: an updated systematic review and meta-analysis.

Kim JH(1), Ahn C(1), Park Y(2), Won M(1).

ABSTRACT

The coronavirus disease of 2019 (COVID-19) pandemic, directly and indirectly, affected the emergency medical care system and resulted in worse out-of-hospital cardiac arrest (OHCA) outcomes and epidemiological features compared with those before the pandemic. This review compares the regional and temporal features of OHCA prognosis and epidemiological characteristics. Various databases were searched to compare the OHCA outcomes and epidemiological characteristics during the COVID-19 pandemic with before the pandemic. During the COVID-19 pandemic, survival and favorable neurological outcome rates were significantly lower than before. Survival to hospitalization, return of spontaneous circulation, endotracheal intubation, and use of an automated external defibrillator (AED) decreased significantly, whereas the use of a supraglottic airway device, the incidence of cardiac arrest at home, and response time of emergency medical service (EMS) increased significantly. Bystander CPR, unwitnessed cardiac arrest, EMS transfer time, use of mechanical CPR, and in-hospital target temperature management did not differ significantly. A subgroup analysis of the studies that included only the first wave with those that included the subsequent waves revealed the overall outcomes in which the epidemiological features of OHCA exhibited similar patterns. No significant regional differences between the OHCA survival rates in Asia before and during the pandemic were observed, although other variables varied by region. The COVID-19 pandemic altered the epidemiologic characteristics, survival rates, and neurological prognosis of OHCA patients.

CPR/MECHANICAL CHEST COMPRESSION

1. Am J Emerg Med. 2023 May 15;70:70-74. doi: 10.1016/j.ajem.2023.05.006. Online ahead of print.

Assessment of over-the-head resuscitation method in an inflatable rescue boat sailing at full speed. A non-inferiority pilot study.

Barcala-Furelos R(1), Carracedo-Rodríguez E(1), Lorenzo-Martínez M(1), Alonso-Calvete A(2), Otero-Agra M(3), Jorge-Soto C(4).

ABSTRACT

INTRODUCTION: Drowning is a public health problem. Interrupting the drowning process as soon as possible and starting cardiopulmonary resuscitation (CPR) can improve survival rates. Inflatable rescue boats (IRBs) are widely used worldwide to rescue drowning victims. Performing CPR in special circumstances requires adjusting the position based on the environment and space available. The aim of this study was to assess the quality of over-the-head resuscitation performed by rescuers aboard an IRB in comparison to standard CPR. METHODS: A quasi-experimental, quantitative, cross-sectional pilot study was conducted. Ten professional rescuers performed 1 min of simulated CPR on a QCPR Resuscy Anne manikin (Laerdal, Norway) sailing at 20 knots using two different techniques: 1) standard CPR (S-CPR) and 2) over-the-head CPR (OTH-CPR). Data were recorded through the APP QCPR Training (Laerdal, Norway). RESULTS: The quality of CPR was similar between S-CPR (61%) and

OTH-CPR (66%), with no statistically significant differences (p = 0.585). Both the percentage of compressions and the percentage of correct ventilations did not show significant differences (p > 0.05) between the techniques. CONCLUSION: The rescuers can perform CPR maneuvers with acceptable quality in the IRB. The OTH-CPR technique did not show inferiority compared to S-CPR, making it a viable alternative when boat space or rescue conditions do not allow the conventional technique to be performed.

REGISTRIES, REVIEWS AND EDITORIALS

1. Scand J Med Sci Sports. 2023 May 24. doi: 10.1111/sms.14400. Online ahead of print.

A 3-year population-based study of exercise-related sudden cardiac arrest among 12- to 50-year-old Norwegians.

Isern CB(1)(2)(3), Kramer-Johansen J(1)(2), Tjelmeland I(1)(2)(4), Bahr R(3), Berge HM(3)(5).

ABSTRACT

INTRODUCTION: Regular exercise is associated with reduced risk of cardiovascular disease. Paradoxically, an increased risk of sudden cardiac arrest (SCA) is documented during or immediately after exercise and in athletes compared to the nonathletic population. Our objective was to identify, through multiple sources, the total number of exercise-related versus non-exercise-related SCA in the young population in Norway. METHODS: We collected primary data from the prospective Norwegian Cardiac Arrest Registry (NorCAR) for all patients aged 12-50 suffering SCA of presumed cardiac cause from 2015 to 2017. We collected secondary data about prior physical activity and the SCA, through questionnaires. We searched media reports for SCA incidents in sports. Exercise-related SCA is defined as SCA during or <1 h after exercise. RESULTS: Overall, 624 patients, median age 43 years, were included from NorCAR. Two thirds (393) replied to the study invitation, of whom 236 answered the questionnaires: 95 survivors and 141 next of kin. The media search resulted in 18 relevant hits. With a multiple source approach, we identified 63 cases of exercise-related SCA, equivalent to an incidence of 0.8/100 000 person-years, versus 7.8/100 000 person-years of non-exercise-related SCA. Among those who answered (n = 236), almost two thirds (59%) exercised regularly, most commonly (45%) 1-4 h/week. Endurance exercise (38%) was the most prevalent type of regular exercise and the most common activity during exercise-related SCA (53%). CONCLUSION: The burden of exercise-related SCA was low (0.8 per 100 000 person-years) and ten times lower than non-exercise-related SCA in the young population in Norway.

2. Indian J Crit Care Med. 2023 May;27(5):322-329. doi: 10.5005/jp-journals-10071-24457.

Arrest Outcome Consortium Registry Analysis [AOCRA 2022]: Outcome Statistics of Cardiac Arrest in Tertiary Care Hospitals in India, Analysis of Five Year Data of Indian Online Cardiac Arrest Registry, www.aocregistry.com.

Clerk AM(1), Patel K(2), Shah BA(3), Prajapati D(4), Shah RJ(5), Rachhadia J(6), Desai N(7), Vyas B(8).

ABSTRACT

AIM AND BACKGROUND: To publish data with outcome statistics from our online cardiac arrest (CA) outcome consortium (AOC) online registry. MATERIALS AND METHODS: Data on cardiac arrest (CA) tertiary care hospitals were collected on the AOC registry online portal from January 2017 to May 2022. Survival endpoints from cardiac arrest events like ROSC, and survival at hospital discharge with neurological status at discharge were analyzed and presented. Studies of demographics, the association of outcome with age, gender, bystander CPR, low and no flow times, and admission lactate were also done along with suitable statistical analysis. RESULTS: Out of 2,235 CA, 2,121 received CPR (1,998 IHCA, 123 Out of hospital Cardiac Arrest (OHCA)) as 114 were DNR. The males-female ratio was 70:30. Average age at arrest was 58.7 years. 26% OHCA received bystander CPR but

survival advantage was not significant. (with 16%, without 14% p = 0.78). Asystole (67.7%), Pulseless Electrical Activity (PEA) (25.6%), and VF/pVT (6.7%) as first rhythm significantly influence survival (4.9, 8.6 and 39.4%: p < 0.001) ROSC was achieved in 355 (16.7%), with 173 (8.2%) alive and 141 (6.6%) having good (CPC ≤ 2) neurological state at discharge. At discharge, survival as well as CPC ≤ 2 outcomes were significantly better in females. On multivariate regression analysis, first rhythm and low flow time influence survival at discharge. Admission lactate (available only in 102 OHCA) was lower in survivors than non-survivors 10.3 vs 11.5 mmol/L but the difference was not statistically significant (p = 0.397]. CONCLUSION: Data from our AOC registry shows poor overall survival from CA. The Female gender had a higher survival rate. Ventricular Fibrillation/Pulseless Ventricular Tachycardia (VF/pVT) as first rhythm and low flow time influence the survival to discharge (CTRI/2022/11/047140).

3. Crit Care Med. 2023 Jun 1;51(6):e134-e135. doi: 10.1097/CCM.0000000000005857. Epub 2023 May 18.
What Is the True Meaning of a "Good" Pediatric Cerebral Performance Category Score at Hospital Discharge in Pediatric Cardiac Arrest Survivors?
Albrecht M(1), Dulfer K, Hunfeld M, de Jonge RCJ, Buysse CMP.
NO ABSTRACT AVAILABLE

4. Egypt J Intern Med. 2023;35(1):36. doi: 10.1186/s43162-023-00222-3. Epub 2023 May 19.
Sudden cardiac death in the adolescent population: a narrative review.
Patel MA(1), Malhotra A(2), Mpondo FHM(2), Gupta V(3), Jain R(2), Gupta S(4), Jain R(2).
ABSTRACT
BACKGROUND: Death from unexpected circulatory arrest within 60 min of onset of symptom is known as sudden cardiac death (SCD). In spite of the advancement in treatment and prevention strategies, SCD remains the most common cause of death worldwide especially in the young. MAIN BODY: This review focuses on highlighting how different cardiovascular diseases contribute to SCD. We discuss the clinical symptoms that the patient experience prior to sudden cardiac arrest and the treatment strategies including pharmacological and surgical treatment. CONCLUSIONS: We conclude that since there are many causes of SCD and very few treatment options, prevention strategies, early detection, and resuscitation of those at greatest risk is important.

5. Resuscitation. 2023 May 19:109848. doi: 10.1016/j.resuscitation.2023.109848. Online ahead of print.
OXYGEN THERAPY TARGETS IN POST CARDIAC ARREST PATIENTS WITH HYPOXIC RESPIRATORY FAILURE.
Young PJ(1).
NO ABSTRACT AVAILABLE

6. Resuscitation. 2023 Jun;187:109804. doi: 10.1016/j.resuscitation.2023.109804. Epub 2023 Apr 23.
Precise identification of area of maximal compression using transesophageal echocardiography during cardiopulmonary resuscitation.
Chang CJ(1), Sun JT(1), Ma MH(2), Chiang WC(2), Chu SE(3).
NO ABSTRACT AVAILABLE

IN-HOSPITAL CARDIAC ARREST

1. BMC Anesthesiol. 2023 May 25;23(1):178. doi: 10.1186/s12871-023-02138-5.

Prediction model of in-hospital mortality in intensive care unit patients with cardiac arrest: a retrospective analysis of MIMIC -IV database based on machine learning.

Sun Y(1), He Z(#)(2), Ren J(#)(3), Wu Y(#)(4).

ABSTRACT

BACKGROUND: Both in-hospital cardiac arrest (IHCA) and out-of-hospital cardiac arrest (OHCA) have higher incidence and lower survival rates. Predictors of in-hospital mortality for intensive care unit (ICU) admitted cardiac arrest (CA) patients remain unclear. METHODS: The Medical Information Mart for Intensive Care IV (MIMIC-IV) database was used to perform a retrospective study. Patients meeting the inclusion criteria were identified from the MIMIC-IV database and randomly divided into training set (n = 1206, 70%) and validation set (n = 516, 30%). Candidate predictors consisted of the demographics, comorbidity, vital signs, laboratory test results, scoring systems, and treatment information on the first day of ICU admission. Independent risk factors for in-hospital mortality were screened using the least absolute shrinkage and selection operator (LASSO) regression model and the extreme gradient boosting (XGBoost) in the training set. Multivariate logistic regression analysis was used to build prediction models in training set, and then validated in validation set. Discrimination, calibration and clinical utility of these models were compared using the area under the curve (AUC) of the receiver operating characteristic (ROC) curves, calibration curves and decision curve analysis (DCA). After pairwise comparison, the best performing model was chosen to build a nomogram. RESULTS: Among the 1722 patients, in-hospital mortality was 53.95%. In both sets, the LASSO, XGBoost,the logistic regression(LR) model and the National Early Warning Score 2 (NEWS 2) models showed acceptable discrimination. In pairwise comparison, the prediction effectiveness was higher with the LASSO,XGBoost and LR models than the NEWS 2 model ($p < 0.001$). The LASSO, XGBoost and LR models also showed good calibration. The LASSO model was chosen as our final model for its higher net benefit and wider threshold range. And the LASSO model was presented as the nomogram. CONCLUSIONS: The LASSO model enabled good prediction of in-hospital mortality in ICU admission CA patients, which may be widely used in clinical decision-making.

2. Curr Probl Cardiol. 2023 May 19:101819. doi: 10.1016/j.cpcardiol.2023.101819. Online ahead of print.

Trends in the prevalence of infiltrative cardiomyopathy among patients with in-hospital cardiac arrest.

Nandy S(1), Hajra A(2), Bandyopadhyay D(3), Malik A(3), Mankad R(4), Grogan M(4), Abou Ezzeddine O(4), Klarich KW(4).

ABSTRACT

BACKGROUND: Sarcoidosis, amyloidosis, hemochromatosis and scleroderma are the most forms of infiltrative/non-ischemic cardiomyopathy (NICM) associated with sudden cardiac death. In patients who undergo in-hospital cardiac arrest, a high index of suspicion is required to rule out NICM as an underlying contributor. METHODS: We aimed to analyze the prevalence of NICM among patients with in-hospital cardiac arrest and identify factors associated with increased mortality. We analyzed data from the National Inpatient Sample (NIS), and identified patients who were hospitalized across 10 years from 2010-2019 with a diagnosis of cardiac arrest and NICM. RESULTS: The total number of patients with in-hospital cardiac arrest was 19,34,260. The total number with NICM was 14,803 (0.77%). Mean age was 63 years. Overall prevalence of NICM across the years ranged between 0.75 to 0.9%, with a significant temporal increase($p<0.01$). Incidence of in-hospital mortality ranged between 61% to 76% for females and 30 to 38% for males. The following co-morbidities were more prevalent in patients with NICM than those without: heart failure, chronic obstructive pulmonary disease (COPD), chronic kidney disease, anemia, malignancy, coagulopathy, ventricular tachycardia, acute kidney injury and stroke. The following factors were independent predictors of in-hospital mortality-age, female gender, Hispanic race, history of COPD and presence of malignancy ($p=0.042$). CONCLUSION: The prevalence of infiltrative cardiomyopathy in patients with in-hospital cardiac arrest is increasing. Females, older patients and Hispanic population are at an increased risk of

mortality. Sex and race-based disparities in the prevalence of NICM in patients with in-hospital cardiac arrest is an area of further research.

3. Intern Med J. 2023 May;53(5):798-802. doi: 10.1111/imj.15638. Epub 2022 Aug 27.
Non-beneficial resuscitation during inhospital cardiac arrests in a metropolitan teaching hospital.
Crosbie D(1), Ghosh A(1), Van Ekeren N(1), Dowling M(1), Hayes B(2)(3), Cross A(1)(4), Jones D(5)(6).
ABSTRACT
BACKGROUND: There is increasing recognition that a proportion of hospitalised patients receive non-beneficial resuscitation, with the potential to cause harm. AIM: To describe the prevalence of non-beneficial resuscitation attempts in hospitalised patients and identify interventions that could be used to reduce these events. METHODS: A retrospective analysis was conducted of all adult inhospital cardiac arrests (IHCA) receiving cardiopulmonary resuscitation (CPR) in a teaching hospital over 9 years. Demographics and arrest characteristics were obtained from a prospectively collected database. Non-beneficial CPR was defined as CPR being administered to patients who had a current not-for-resuscitation (NFR) order in place or who had a NFR order enacted on a previous hospital admission. Further antecedent factors and resuscitation characteristics were collected for these patients. RESULTS: There were 257 IHCA, of which 115 (44.7%) occurred on general wards, with 19.8% of all patients surviving to discharge home. There were 39 (15.2%) instances of non-beneficial CPR, of which 28 (72%) of 39 occurred in unmonitored patients on the ward comprising nearly one-quarter (28/115) of all arrests in this patient group. A specialist had reviewed 30 (76.9%) of 39 of these patients, and 33.3% (13/39) had a medical emergency team (MET) review prior to their arrest. CONCLUSIONS: Over one in seven resuscitation attempts were non-beneficial. MET reviews and specialist ward rounds provide opportunities to improve the documentation and visibility of NFR status.

4. Cureus. 2023 Apr 22;15(4):e37987. doi: 10.7759/cureus.37987. eCollection 2023 Apr.
Sickle Cell Anemia Associated With Increased In-Hospital Mortality in Post-Cardiac Arrest Patients.
Mohamed Jiffry MZ(1), Hassan R(2), Davis A(2), Scharf S(2), Walgamage T(1), Ahmed-Khan MA(3)(1), Dandwani M(1).
ABSTRACT
Introduction Sickle cell anemia (SCA) is a hemoglobinopathy that arises from a point mutation in the beta-globin gene, which causes the polymerization of deoxygenated hemoglobin that leads to a wide variety of clinical complications. Deaths in patients with SCA most commonly arise from renal, cardiovascular disease, infections, and stroke. In-hospital cardiac arrest has been found to be more common in older patients and those on ventilatory life support, among others. This study aims to provide more insight into how SCA affects the risk of in-hospital mortality in post-cardiac arrest patients. Methods The National Inpatient Survey database years 2016 to 2019 was utilized. The International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10 PCS) codes for cardiopulmonary resuscitation were used to identify in-hospital cardiac arrest (IHCA) patients. ICD-10 Clinical Modification (CM) codes were used to identify SCA and other medical comorbidities. Categorical data was compared using Person's chi-square test, and continuous variables were compared using the independent samples t-test. Multinomial logistic regression was used to study the effects of SCA on post-arrest in-hospital mortality controlling for age, Charlson comorbidity score, and demographic variables. Binomial logistic regression models for dichotomous variables were utilized in the subgroup and secondary outcomes analysis. Results In patients with IHCA, patients who had SCA were found to have a significantly increased risk of in-hospital mortality adjusted for baseline characteristics and Charlson comorbidity score (OR: 1.16, 95% CI: 1.02-1.32, p=0.0025). Patient characteristics most strongly associated with an increased risk of in-hospital mortality in this cohort were found to be Black race (OR: 1.92, 95% CI: 1.87-1.97, p<0.001) and self-payer status (OR: 2.14, 95% CI: 2.06-2.22, p<0.001). Subgroup analysis revealed only patients with

sickle cell disease had a statistically significant increased risk of in-hospital mortality in this cohort (OR: 4.41, 95% CI: 3.5-5.55, p<0.001), and patients with sickle cell trait did not. Conclusion In patients with IHCA, SCA is associated with an increased risk of in-hospital mortality. This risk was confined to patients with sickle cell disease and not patients with sickle cell trait.

5. Resuscitation. 2023 Jun;187:109814. doi: 10.1016/j.resuscitation.2023.109814. Epub 2023 Apr 28.
The chain of survival for in-hospital cardiac arrest: Improving systems of care.
Schloss D(1), Steinberg A(2).
NO ABSTRACT AVAILABLE

INJURIES AND CPR

No articles identified.

CAUSE OF THE ARREST

1. PLoS One. 2023 May 25;18(5):e0286084. doi: 10.1371/journal.pone.0286084. eCollection 2023.
Characteristics and predictors of out-of-hospital cardiac arrest in young adults hospitalized with acute coronary syndrome: A retrospective cohort study of 30,000 patients in the Gulf region.
Alsaeed AH(1), Hersi A(1), Kashour T(1), Zubaid M(2), Al Suwaidi J(3), Amin H(4), AlMahmeed W(5), Sulaiman K(6), Al-Motarreb A(7), Alhabib KF(1), Alqarawi W(1)(8).
ABSTRACT
INTRODUCTION: The characteristics of young adults with out-of-hospital cardiac arrest (OHCA) due to acute coronary syndrome (ACS) has not been well described. The mean age of gulf citizens in ACS registries is 10-15 years younger than their western counterparts, which provided us with a unique opportunity to investigate the characteristics and predictors of OHCA in young adults presenting with ACS. METHODOLOGY: This was a retrospective cohort study using data from 7 prospective ACS registries in the Gulf region. In brief, all registries included consecutive adults who were admitted with ACS. OHCA was defined as cardiac arrest upon presentation (i.e., before admission to the hospital). We described the characteristics of young adults (< 50 years) who had OHCA and performed multivariate logistic regression analysis to assess independent predictors of OHCA. RESULTS: A total of 31,620 ACS patients were included in the study. There were 611 (1.93%) OHCA cases in the whole cohort [188/10,848 (1.73%) in young adults vs 423/20,772 (2.04%) in older adults, p = 0.06]. Young adults were predominantly males presenting with ST-elevation myocardial infarction (STEMI) [182/188 (96.8%) and 172/188 (91.49%), respectively]. OHCA was the sentinel event of coronary artery disease (CAD) in 70% of young adults. STEMI, male sex, and non-smoking status were found to be independent predictors of OHCA [OR = 5.862 (95% CI 2.623-13.096), OR: 4.515 (95% CI 1.085-18.786), and OR = 2.27 (95% CI 1.335-3.86), respectively]. CONCLUSION: We observed a lower prevalence of OHCA in ACS patients in our region as compared to previous literature from other regions. Moreover, OHCA was the sentinel event of CAD in the majority of young adults, who were predominantly males with STEMIs. These findings should help risk-stratify patients with ACS and inform further research into the characteristics of OHCA in young adults.

2. Europace. 2023 May 19;25(5):euad126. doi: 10.1093/europace/euad126.
Sudden cardiac death after heart transplantation: a population-based study.
Bonnet G(1)(2), Coutance G(1)(3), Aubert O(1)(4), Waldmann V(1)(5), Raynaud M(1), Asselin A(1), Bories MC(5), Guillemain R(5), Bruneval P(6), Varnous S(3)(7), Leprince P(3)(7), Achouch P(5), Marijon E(1)(5), Loupy A(1)(4), Jouven X(1)(5).

ABSTRACT

AIMS: The epidemiology of sudden cardiac death (SCD) after heart transplantation (HTx) remains imprecisely described. We aimed to assess the incidence and determinants of SCD in a large cohort of HTx recipients, compared with the general population. METHODS AND RESULTS: Consecutive HTx recipients (n = 1246, 2 centres) transplanted between 2004 and 2016 were included. We prospectively assessed clinical, biological, pathologic, and functional parameters. SCD was centrally adjudicated. We compared the SCD incidence beyond the first year post-transplant in this cohort with that observed in the general population of the same geographic area (registry carried out by the same group of investigators; n = 19 706 SCD). We performed a competing risk multivariate Cox model to identify variables associated with SCD. The annual incidence of SCD was 12.5 per 1,000 person-years [95% confidence interval (CI), 9.7-15.9] in the HTx recipients cohort compared with 0.54 per 1,000 person-years (95% CI, 0.53-0.55) in the general population (P < 0.001). The risk of SCD was markedly elevated among the youngest HTx recipients with standardized mortality ratios for SCD up to 837 for recipients ≤30 years. Beyond the first year, SCD was the leading cause of death. Five variables were independently associated with SCD: older donor age (P = 0.003), younger recipient age (P = 0.001) and ethnicity (P = 0.034), pre-existing donor-specific antibodies (P = 0.009), and last left ventricular ejection fraction (P = 0.048). CONCLUSION: HTx recipients, particularly the youngest, were at very high risk of SCD compared with the general population. The consideration of specific risk factors may help identify high-risk subgroups.

END-TIDAL CO_2

No articles identified.

ORGAN DONATION

No articles identified.

FEEDBACK

No articles identified.

DRUGS

No articles identified.

TRAUMA

1. Eur J Trauma Emerg Surg. 2023 May 25. doi: 10.1007/s00068-023-02284-y. Online ahead of print.
Outcomes of resuscitative and emergent thoracotomies following injury at the largest trauma center in Estonia.
Saar S(1)(2), Lipping E(3)(4), Bahhir A(3)(4), Talviste M(3)(4), Lepp J(3), Väli M(5), Talving P(3)(4).

ABSTRACT

BACKGROUND: An emergency department thoracotomy (EDT) is performed in critically injured patients after a recent or in an imminent cardiac arrest following trauma. Emergent thoracotomy

(ET) or operation room thoracotomy is reserved for more stable patients. However, the number of these interventions performed in an European settings is limited. Thus, we initiated the current study to investigate outcomes and risk factors for mortality of patients required EDT or ET at the largest trauma center in Estonia. METHODS: All patients admitted after trauma to the North Estonia Medical Centre between 1/1/2017 and 31/12/2021 subjected to EDT or ET were included. Primary outcome was 30-day mortality. RESULTS: Overall, 39 patients were included. EDT and ET were performed in 16 and 23 patients, respectively. Median age was 45 (33-53) years and 89.7% were males. The crude 30-day mortality was 56.4% being 87.5% and 34.8% in the EDT and ET group, respectively. None of the patients with pre-hospital CPR requirement, severe head injury (AIS head ≥ 3) or severe abdominal injury (AIS abdomen ≥ 3) survived. All the patients in the survival group had signs of life in the emergency department. The rate of stab wounds was significantly higher in the survival group ($p = 0.007$). Patients with CGS < 9 had significantly lower possibility for survival ($p < 0.001$). CONCLUSIONS: EDT and ET outcomes in Estonian trauma system are comparable to similar advanced trauma systems in Europe. Patients with GCS > 8, signs of life in the ED and with isolated penetrating chest injury had the most favorable outcomes.

VENTILATION

No articles identified.

CERERBRAL MONITORING

No articles identified.

ULTRASOUND AND CPR

1. Scand J Trauma Resusc Emerg Med. 2023 May 20;31(1):24. doi: 10.1186/s13049-023-01077-x.
Resuscitative transesophageal echocardiography in the emergency department: a single-centre case series.
Kegel F(1), Chenkin J(2)(3).

ABSTRACT

BACKGROUND: Transesophageal echocardiography (TEE) is an emerging tool that can aid emergency physicians in treating patients in cardiac arrest and undifferentiated shock. TEE can aid in diagnosis, resuscitation, identify cardiac rhythms, guide chest compression vectors, and shorten sonographic pulse checks. This study evaluated the proportion of patients who underwent a change in their resuscitation management as a result of emergency department resuscitative TEE. METHODS: This was a single-centre case series of 25 patients who underwent ED resuscitative TEE from 2015 to 2019. The objective of this study is to evaluate the feasibility and clinical impact of resuscitative TEE in critically ill patients in the emergency department. Data including changes in working diagnosis, complications, patient disposition, and survival to hospital discharge were also collected. RESULTS: 25 patients (median age 71, 40% female) underwent ED resuscitative TEE. All patients were intubated prior to probe insertion and adequate TEE views were obtained for every patient. The most common indications for resuscitative TEE were cardiac arrest (64%) and undifferentiated shock (28%). Resuscitation management changed in 76% (N = 19) and working diagnosis changed in 76% (N = 19) of patients. Ten patients died in the ED, 15 were admitted to hospital, and eight survived to hospital discharge. There were no immediate complications (0/15) and two delayed complications (2/15), both of which were minor gastrointestinal bleeding. CONCLUSIONS: The use of ED

resuscitative TEE is a practical modality that provides useful diagnostic and therapeutic information for critically ill patients in the emergency department, with an excellent rate of adequate cardiac visualization, and a low complication rate.

ORGANISATION AND TRAINING

1. Resuscitation. 2023 May 23:109850. doi: 10.1016/j.resuscitation.2023.109850. Online ahead of print.

Racial and Ethnic Disparities in the Treatment and Outcomes for Witnessed Out-of-Hospital Cardiac Arrest in Connecticut.

Sutton TS(1), Bailey DL(2), Rizvi A(3), Al-Araji R(4), Kasliwala Q(5), Nero T(6), Scalzo M(3), Panza G(7), Mather JF(7), Orlando R(8), Hashim S(9), McKay RG(3).

ABSTRACT

BACKGROUND: Racial and ethnic disparities in the treatment and outcomes for witnessed out-of-hospital cardiac arrest (OHCA) in the United States have been previously described. We sought to characterize disparities in pre-hospital care, overall survival, and survival with favorable neurological outcomes following witnessed OHCA in the state of Connecticut. METHODS: We performed a cross-sectional study to compare pre-hospital treatment and outcomes for White versus Black and Hispanic (Minority) OHCA patients submitted from Connecticut to the Cardiac Arrest Registry to Enhance Survival (CARES) between 2013 and 2021. Primary outcomes included bystander CPR use, bystander automated external defibrillator (AED) use with attempted defibrillation, overall survival, and survival with favorable cerebral function. RESULTS: 2,809 patients with witnessed OHCA were analyzed (924 Black or Hispanic; 1885 White). Minorities had lower rates of bystander CPR (31.4% vs 39.1%, P=0.002) and bystander AED placement with attempted defibrillation (10.5% vs 14.4%, P=0.004), with lower rates of survival to hospital discharge (10.3% vs 14.8%, P=0.001) and survival with favorable cerebral function (65.3% vs 80.2%, P=0.003). Minorities were less likely to receive bystander CPR in communities with median annual household income >$80, 000 (OR, 0.56; 95% CI, 0.33 - 0.95; P=0.030) and in integrated neighborhoods (OR, 0.70; 95% CI, 0.52 - 0.95; P=0.020). CONCLUSIONS: Black and Hispanic Connecticut patients with witnessed OHCA have lower rates of bystander CPR, attempted AED defibrillation, overall survival, and survival with favorable neurological outcomes compared to White patients. Minorities were less likely to receive bystander CPR in affluent and integrated communities.

2. Afr J Emerg Med. 2023 Jun;13(2):114-119. doi: 10.1016/j.afjem.2023.04.004. Epub 2023 May 15.

An evaluation of basic life support training among medical students in Southwest Nigeria: A web-based study.

Onabanjo SO(1), Ibu FO(1), Adeyeye AA(1), Akodu BA(2), Adaramola OG(1), Popoola AO(1).

ABSTRACT

BACKGROUND: Basic Life Support (BLS) is considered a lifesaving measure and sound knowledge is expected among health professionals. Studies conducted among medical doctors and students in many developing countries show deficiencies in knowledge and practice of essential BLS skills. This study assessed the awareness, knowledge, perception, practice, accessibility and barriers to BLS training amongst medical students in South-Western Nigeria, exposing skill gaps and training challenges to inform appropriate solutions. METHODS: This was a cross-sectional descriptive e-survey involving 2nd - 6th year medical students enrolled in 12 regional medical schools. Overall, 553 responses were received over a 3-month period from November 2020 to January 2021 and analyzed using IBM-SPSS 26. RESULTS: Of the 553 respondents, 79.2% were aware of BLS however only 160 (29%) respondents had good knowledge of BLS principles. Increasing age, higher level of study, prior

BLS training and being enrolled in College of Medicine, University of Lagos (CMUL) were significantly associated with a higher knowledge score ($p<0.05$). Majority (99.5%) considered BLS training necessary however, only 51.3% had prior training. Increased level of study correlated with prior BLS training ($p<0.05$) alongside higher BLS uptake by respondents from CMUL (26.7%) and College of Medicine, University of Ibadan (20.9%) compared to respondents from other schools ($p<0.05$). Only 35.4% had ever done Cardiopulmonary Resuscitation. Most respondents reported no confidence in performing BLS (67.1%) or in using an Automated External Defibrillator (85.7%). Unavailability of training opportunities in state (35%), town (42%) and cost (27%) were major barriers to BLS training identified. CONCLUSION: Despite a high level of awareness of BLS training, knowledge of BLS principles and its practice is poor among Nigerian medical students, reflecting a need to integrate stand-alone/structured BLS trainings into the medical curriculum to increase participation and accessibility by medical students.

3. Arch Acad Emerg Med. 2023 Apr 27;11(1):e33. doi: 10.22037/aaem.v11i1.2012. eCollection 2023.
Sustained Return of Spontaneous Circulation Following Out-of-Hospital Cardiac Arrest; Developing a Predictive Model Based on Multivariate Analysis.
Huabbangyang T(1), Silakoon A(1), Papukdee P(1), Klaiangthong R(1), Thongpean C(2), Pralomcharoensuk W(2), Khaokaen W(2), Bumrongchai S(2), Chaisorn R(3), Saumok C(3).
ABSTRACT
INTRODUCTION: Identifying the predictive factors of sustained return of spontaneous circulation (ROSC) following out-of-hospital cardiac arrest (OHCA) will be helpful in management of these patients. This study aimed to develop a predictive model in this regard. METHODS: In a retrospective observational study, data of adult patients with OHCA, were collected from Vajira emergency medical services patient care report. Multiple logistic regression analysis with a regression coefficient was used to develop a predictive score for a sustained ROSC at the scene. Area under the receiver operating characteristic (ROC) curve (AUC) was used to validate the accuracy of the predictive score for a sustained ROSC. RESULTS: Independent factors associated with a sustained ROSC included cardiopulmonary resuscitation (CPR) duration < 30 min (adjusted odds ratio (AOR)= 5.05, 95% confidence interval (CI): 3.34-7.65; $p < 0.001$); advanced airway management with an endotracheal tube (AOR= 3.06, 95% CI: 1.77-5.31; $p < 0.001$); advanced airway management with laryngeal mask airway (AOR= 3.42, 95% CI: 1.02-11.46; $p = 0.046$); defibrillation (AOR = 2.05, 95% CI: 1.31-3.2; $p = 0.002$); Capillary blood glucose (CBG) level < 150 mg% (AOR= 1.95, 95% CI: 1.05-3.65; $p = 0.035$); CBG at least 150 mg% (AOR= 2.87, 95% CI: 1.56-5.29; $p = 0.001$); pupil reflex (AOR = 2.96, 95% CI: 1.1-7.96; $p = 0.032$); and response time at most 8 min (AOR= 1.66, 95% CI: 1.07-2.57; $p = 0.023$). These were developed into the pupil reflex, response time, advanced airway management, defibrillation, CBG, and CPR duration (PRAD-CCPR) score. The most accurate cutoff point of score using Youden's index was ≥ 6 with AUC of 0.759 (95% CI: 0.715-0.802; $p < 0.001$), sensitivity of 62.0% (95% CI: 51.2-71.9%), specificity of 75.7% (95% CI: 69.4-81.2%), positive predictive value of 51.8% (95% CI: 40.9-62.3%), and negative predictive value of 79.5% (95% CI: 73.5-84.6%). CONCLUSION: An optimal PRAD-CCPR score of ≥ 6 provides an acceptable accuracy of 0.759 with sensitivity of 62.0% and specificity of 75.7% in prediction of sustained ROSC following OHCA. This predictive score might help CPR commanders to prognosticate the outcome of patients with OHCA at the scene.

4. Resuscitation. 2023 May 19:109847. doi: 10.1016/j.resuscitation.2023.109847. Online ahead of print.
The development of a risk-adjustment strategy to benchmark emergency medical service (EMS) performance in relation to out-of-hospital cardiac arrest in Australia and New Zealand.

Howell S(1), Smith K(2), Finn J(3), Cameron P(4), Ball S(5), Bosley E(6), Doan T(7), Dicker B(8), Faddy S(9), Nehme Z(10), Swain A(11), Thorrowgood M(12), Thomas A(13), Perillo S(14), McDermott M(15), Smith T(16), Bray J(17); Aus-ROC OHCA Epistry Management Committee.

ABSTRACT

INTRODUCTION: The aim of this study was to develop a risk adjustment strategy, including effect modifiers, for benchmarking emergency medical service (EMS) performance for out-of-hospital cardiac arrest (OHCA) in Australia and New Zealand. METHOD: Using 2017-2019 data from the Australasian Resuscitation Outcomes Consortium (Aus-ROC) OHCA Epistry, we included adults who received an EMS attempted resuscitation for a presumed medical OHCA. Logistic regression was applied to develop risk adjustment models for event survival (return of spontaneous circulation at hospital handover) and survival to hospital discharge/30 days. We examined potential effect modifiers, and assessed model discrimination and validity. RESULTS: Both OHCA survival outcome models included EMS agency and the Utstein variables (age, sex, location of arrest, witnessed arrest, initial rhythm, bystander cardiopulmonary resuscitation, defibrillation prior to EMS arrival, and EMS response time). The model for event survival had good discrimination according to the concordance statistic (0.77) and explained 28% of the variation in survival. The corresponding figures for survival to hospital discharge/30 days were 0.87 and 49%. The addition of effect modifiers did little to improve the performance of either model. CONCLUSION: The development of risk adjustment models with good discrimination is an important step in benchmarking EMS performance for OHCA. The Utstein variables are important in risk-adjustment, but only explain a small proportion of the variation in survival. Further research is required to understand what factors contribute to the variation in survival between EMS.

5. Heliyon. 2023 May 8;9(5):e16032. doi: 10.1016/j.heliyon.2023.e16032. eCollection 2023 May.

Surfers as aquatics rescuers in Portugal and Spain: Characteristics of rescues and resuscitation knowledge.

De Oliveira J(1)(2), Lorenzo-Martínez M(1), Barcala-Furelos R(1), Queiroga AC(3)(4), Alonso-Calvete A(1)(5).

ABSTRACT

The aim of this study was to analyze the rescues carried out by surfers from Portugal and Spain, their knowledge of rescue and resuscitation and their perception and risk behavior while surfing. An online survey was conducted in 2048 surfers from Portugal and Spain, with questions regarding the demographic characteristics, experience, perception and risk behavior of the surfers; rescues attended by the surfers and surfer's knowledge and experience in rescue and resuscitation. Concerning the number of rescues carried out by surfers, 78.5% of the participants had to carry out at least one rescue in their lifetime. A significant association was found between the years of surfing experience, the surfing level and the number of rescues carried out ($p < 0.05$). Thirty-five-point eight percent of the surfers never attended a cardiopulmonary resuscitation (CPR) course and 76.2% had no work experience as a lifeguard. Correspondingly, the vast majority of the surfers analyzed did not have the essential knowledge about rescue and resuscitation. This study provides evidence of the important role that surfers play in saving lives on Portuguese and Spanish beaches. The results suggest that the number of rescues conducted by surfers each year in Portugal and Spain is relevant to reducing the number of fatalities that occur along coasts.

6. Resusc Plus. 2023 May 13;14:100394. doi: 10.1016/j.resplu.2023.100394. eCollection 2023 Jun.

The experience of online cardiac arrest video use for education and research: A qualitative interview study completed in partnership with survivors and co-survivors.

Douma MJ(1)(2), Picard CT(3), Brindley PG(2), Gibson J(4)(5).

ABSTRACT
BACKGROUND: Swift recognition of cardiac arrest is required for survival, however failure to recognize (and delayed response) is common. Studying online cardiac arrest videos may aid recognition, however the ethical implications of this are unknown. We examined their use from the perspective of persons with lived experience of cardiac arrest, seeking to understand the experience of having one's cardiac arrest recorded and available online. METHODS: We gathered qualitative data using focused interviews of persons affected by cardiac arrest. Inductive thematic analysis was performed, as well as a deductive ethical analysis. Co-researcher survivors and co-survivors were involved in all stages of this project. FINDINGS: We identified themes of 'shock, hurt and helplessness' and 'surreality and reality' to describe the experience of having one's (or a family member's) cardiac arrest captured and distributed online. Participants provided guidance on the use of online videos for education and research, emphasising beneficence, autonomy, non-maleficence, and justice. CONCLUSIONS: Finding one's own, or a family member's cardiac arrest video online is shocking and potentially harmful for families. If ethical principles are followed however, there may be acceptable procedures for the use of online videos of cardiac arrest for education or research purposes. The careful use of online videos of cardiac arrest for education and research may help improve recognition and response, though additional research is required to confirm or refute this claim.

7. Eur J Anaesthesiol. 2023 May 23. doi: 10.1097/EJA.0000000000001813. Online ahead of print.
Cardiac arrest in the perioperative period: a consensus guideline for identification, treatment, and prevention from the European Society of Anaesthesiology and Intensive Care and the European Society for Trauma and Emergency Surgery.
Hinkelbein J(1), Andres J, Böttiger BW, Brazzi L, De Robertis E, Einav S, Gwinnutt C, Kuvaki B, Krawczyk P, McEvoy MD, Mertens P, Moitra VK, Navarro-Martinez J, Nunnally ME, O'Connor M, Rall M, Ruetzler K, Schmitz J, Thies K, Tilsed J, Zago M, Afshari A.
ABSTRACT
INTRODUCTION: Cardiac arrest in the operating room is a rare but potentially life-threatening event with mortality rates of more than 50%. Contributing factors are often known, and the event is recognised rapidly as patients are usually under full monitoring. This guideline covers the perioperative period and is complementary to the European Resuscitation Council (ERC) guidelines. MATERIAL AND METHODS: The European Society of Anaesthesiology and Intensive Care and the European Society for Trauma and Emergency Surgery jointly nominated a panel of experts to develop guidelines for the recognition, treatment and prevention of cardiac arrest in the perioperative period. A literature search was conducted in MEDLINE, EMBASE, CINAHL and the Cochrane Central Register of Controlled Trials. All searches were restricted to publications from 1980 to 2019 inclusive and to the English, French, Italian and Spanish languages. The authors also contributed individual, independent literature searches. RESULTS: This guideline contains background information and recommendation for the treatment of cardiac arrest in the operating room environment, and addresses controversial topics such as open chest cardiac massage (OCCM), resuscitative endovascular balloon occlusion (REBOA) and resuscitative thoracotomy, pericardiocentesis, needle decompression and thoracostomy. CONCLUSION: Successful prevention and management of cardiac arrest during anaesthesia and surgery requires anticipation, early recognition and a clear treatment plan. The ready availability of expert staff and equipment must also be taken into consideration. Success not only depends on medical knowledge, technical skills and a well organised team using crew resource management but also on an institutional safety culture embedded in everyday practice through continuous education, training and multidisciplinary co-operation.

8. Interact J Med Res. 2023 May 25. doi: 10.2196/46075. Online ahead of print.
Development of a Pilot Introductory Advanced Cardiovascular Resuscitation Course for Senior Medical Students in Switzerland: Student-driven Implementation Study.
Herren T(1), Fivaz L(1), Dufeil E(1), Golay E(1), Braun E(1), Straub E(1), Nidegger P(1), Grosgurin O(1), Gartner BA(1), Suppan M(2), Suppan L(1).
ABSTRACT
BACKGROUND: Cardiac arrest is the most time-critical emergency medical students and junior physicians may face in their personal or professional life. However, many studies have shown that most of them lack the necessary knowledge and skills to efficiently perform resuscitation. This could be related to the fact that advanced cardiovascular resuscitation courses are not always part of the undergraduate medical curriculum. OBJECTIVE: The aim of this study was to describe the development, pilot implementation and assessment of an advanced cardiovascular resuscitation course designed to enable senior medical students to manage the initial resuscitation phase in case of cardiac arrest. METHODS: An introductory advanced cardiovascular resuscitation course was developed on the initiative of fifth-year medical students, in collaboration with the prehospital emergency medical service team of the Geneva University Hospitals. The 60 slots available to the 157 members of the fifth-year promotion of the University of Geneva Faculty of Medicine were filled in less than 8 hours. This unexpected success prompted the creation of a first questionnaire which was sent to the whole promotion to determine the overall proportion of students interested in attending an advanced cardiovascular resuscitation course. This questionnaire was also used to assess basic life support education and experience among course participants. A post-course questionnaire was used to gather feedback regarding the course and to assess student confidence regarding the resuscitation skills they had been taught. RESULTS: Seventy-three fifth-year medical students completed the first questionnaire (73/157 46.5%). Most thought that the current BLS-AED curriculum did not provide them enough knowledge and skills regarding resuscitation and 84.9% (62/73) wished to attend an introductory advanced cardiovascular resuscitation course. All the participants who would have wanted to follow the full ACLS course before graduating were set back by its cost (10/10, 100%). Of the 60 students who had registered for the training sessions, 56 (93.3%) actually attended. The post-course questionnaire was completed by 42 students (out of 48 who had registered on the platform, 87.5%). They unanimously answered that an advanced cardiovascular resuscitation course should be part of the standard curriculum. CONCLUSIONS: This study demonstrates the interest of senior medical students in an advanced cardiovascular resuscitation course and their willingness to see such a course integrated as part of their regular curriculum.

9. Resusc Plus. 2023 May 15;14:100395. doi: 10.1016/j.resplu.2023.100395. eCollection 2023 Jun.
Proposal to increase safety of first responders dispatched to cardiac arrest.
Metelmann B(1), Elschenbroich D(2); European Research Collaboration on Citizen First Responders; Auricchio A(3)(4), Baldi E(5), Beckers SK(6)(7), Burkart R(8)(9), Fredman D(10)(11), Ganter J(12), Krammel M(13)(14), Marks T(1), Metelmann C(15), Müller MP(15), Scquizzato T(16), Stieglis R(17), Strickmann B(18), Christian Thies K(19).
NO ABSTRACT AVAILABLE

10. Circ J. 2023 May 25;87(6):866-878. doi: 10.1253/circj.CJ-23-0096. Epub 2023 Apr 20.
Executive Summary - Acute Coronary Syndrome in the Japan Resuscitation Council Guidelines for Resuscitation 2020.
Kikuchi M(1), Tahara Y(2), Yamaguchi J(3), Nakashima T(4), Nomura O(5), Tanaka A(6), Kojima S(7), Hashiba K(8), Nakayama N(9), Hanada H(5), Mano T(10), Yamamoto T(11), Matsuo K(12), Takeuchi

I(13), Matoba T(14), Nonogi H(15); Japan Resuscitation Council (JRC) Acute Coronary Syndrome (ACS) Task Force and the Guideline Editorial Committee on behalf of the Japanese Circulation Society (JCS) Emergency and Critical Care Committee.
NO ABSTRACT AVAILABLE

11. BMC Med Educ. 2023 May 22;23(1):359. doi: 10.1186/s12909-023-04332-y.
Evaluation of registered nurses' interprofessional emergency care competence through the gamification of cardiopulmonary resuscitation training: a cross-sectional study.
Chen TS(1), Hsieh PL(2), Tung CC(3), Wu CH(4), Cheng YC(5).
ABSTRACT
BACKGROUNDS: Cardiopulmonary resuscitation (CPR) training is generally led by instructors in a classroom; thus, conventional teaching materials used in CPR training are often constrained by spatiotemporal factors, limiting learners' interest and sense of achievement in learning and preventing them from effectively applying what they learn in practice. For greater effectiveness and more flexible application, clinical nursing education has increasingly emphasized contextualization, individualization, and interprofessional learning. This study determined the self-assessed emergency care competencies of nurses who received gamified emergency care training and explored the factors associated with those competencies. METHODS: Quota sampling of nurses working at a certain regional hospital in central Taiwan was conducted, and a structured questionnaire was administered to the recruited nurses. A total of 194 valid responses were collected. The research tool was a scale measuring the participants' emergency care competencies after they received gamified emergency care training. The data were analyzed using descriptive and inferential statistics and multiple regression. RESULTS: Of the recruited participants, 50.52% were ≤ 30 years old; 48.45% worked in the internal medicine department; 54.64% graduated from 2-year university technical programs; 54.12% were N2 registered nurses; 35.57% and 21.13% had ≥ 10 and 1-3 years of work experience, respectively; and 48.45% worked in general wards. User need ($r = 0.52$, $p = 0.000$), perceived usefulness ($r = 0.54$, $p = 0.000$), perceived ease of use ($r = 0.51$, $p = 0.000$), and usage attitude ($r = 0.41$, $p = 0.000$) were positively correlated with emergency care competencies. Furthermore, the multiple regression analysis revealed that perceived usefulness was the primary factor associated with the participants' emergency care competencies. CONCLUSIONS: The results of this study may serve as a reference for acute care facility authorities in designing advanced nursing competency standards and emergency care training programs for nurses.

POST-CARDIAC ARREST TREATMENTS

No articles identified.

TARGETED TEMPERATURE MANAGEMENT

1. J Chin Med Assoc. 2023 May 23. doi: 10.1097/JCMA.0000000000000939. Online ahead of print.
Impact of a targeted temperature management quality improvement project on survival and neurologic outcomes in cardiac arrest patients.
Hsu TH(1), Huang WC(2)(3), Lin KC(2), Huang CL(4), Tai HY(5), Tsai YC(5), Wu MC(2), Chang YT(1)(6)(7)(8).
ABSTRACT
BACKGROUND: Targeted temperature management (TTM) is recommended for post-resuscitation care of patients with sudden cardiac arrest (SCA) and its implementation remains challenging. This

study aimed to evaluate the newly designed Quality Improvement Project (QIP) to improve the quality of TTM and outcomes of patients with SCA. METHODS: Patients who experienced out-of-hospital cardiac arrest (OHCA) and in-hospital cardiac arrest (IHCA) with return of spontaneous circulation (ROSC) and were treated in our hospital between January 2017 and December 2019 were enrolled retrospectively. All included patients received QIP intervention initiated as follows: 1) Protocols and standard operating procedures were created for TTM; 2) Shared decision making was documented; 3) Job training instruction was created; and 4) Lean medical management was implemented. RESULTS: Among 248 included patients, the post-intervention group (n=104) had shorter duration of ROSC to TTM than the pre-intervention group (n=144) (356 vs. 540 minutes, p=0.042); better survival rate (39.4% vs. 27.1%, p=0.04) and neurologic performance (25.0% vs. 17.4%, p<0.001). After propensity score matching (PSM), patients who received TTM (n= 48) had better neurologic performance than those without TTM (n=48) (25.1% vs. 18.8%, p<0.001). OHCA (OR= 2.705, 95% CI: 1.657-4.416), age >60 (OR= 2.154, 95% CI: 1.428-3.244), female (OR= 1.404, 95% CI: 1.005-1.962), and diabetes mellitus (OR= 1.429, 95% CI: 1.019-2.005) were negative predictors of survival; while TTM (OR=0.431, 95% CI: 0.266-0.699) and bystander cardiopulmonary resuscitation (CPR) (OR=0.589, 95% CI: 0.35-0.99) were positive predictors. Age >60 (OR= 2.292, 95% CI: 1.58-3.323) and OHCA (OR= 2.928, 95% CI: 1.858-4.616) were negative predictors of favorable neurologic outcomes; while bystander CPR (OR=0.572, 95% CI: 0.355-0.922) and TTM (OR=0.457, 95% CI: 0.296-0.705) were positive predictors. CONCLUSION: A new QIP with defined protocols, documented shared decision making, and medical management guidelines improves TTM execution, duration from ROSC to TTM, survival, and neurologic outcomes of cardiac arrest patients.

2. Ther Hypothermia Temp Manag. 2023 May 23. doi: 10.1089/ther.2022.0065. Online ahead of print.

The Effect of Targeted Temperature Management on the Metabolome Following Out-of-Hospital Cardiac Arrest.

Beske RP(1), Obling LER(1), Bro-Jeppesen J(2), Nielsen N(3), Meyer MAS(1), Kjaergaard J(1), Johansson PI(4)(5), Hassager C(1)(5).

ABSTRACT

Targeted temperature management (TTM) may moderate the injury from out-of-hospital cardiac arrest. Slowing the metabolism has been a suggested effect. Nevertheless, studies have found higher lactate levels in patients cooled to 33°C compared with 36°C even days from TTM cessation. Larger studies have not been performed on the TTM's effect on the metabolome. Accordingly, to explore the effect of TTM, we used ultra-performance liquid-mass spectrometry in a substudy of 146 patients randomized in the TTM trial to either 33°C or 36°C for 24 hours and quantified 60 circulating metabolites at the time of hospital arrival (T0) and 48 hours later (T48). From T0 to T48, profound changes to the metabolome were observed: tricarboxylic acid (TCA) cycle metabolites, amino acids, uric acid, and carnitine species all decreased. TTM significantly modified these changes in nine metabolites (Benjamini-Hochberg corrected false discovery rate <0.05): branched amino acids valine and leucine levels dropped more in the 33°C arm (change [95% confidence interval]: -60.9 µM [-70.8 to -50.9] vs. -36.0 µM [-45.8 to -26.3] and -35.5 µM [-43.1 to -27.8] vs. -21.2 µM [-28.7 to -13.6], respectively), whereas the TCA metabolites including malic acid and 2-oxoglutaric acid remained higher for the first 48 hours (-7.7 µM [-9.7 to -5.7] vs. -10.4 µM [-12.4 to -8.4] and -3 µM [-4.3 to -1.7] vs. -3.7 µM [-5 to -2.3]). Prostaglandin E2 only dropped in the TTM 36°C group. The results show that TTM affects the metabolism hours after normothermia have been reached.

3. Ther Hypothermia Temp Manag. 2023 May 19. doi: 10.1089/ther.2023.0002. Online ahead of print.

Prognostic Performance of Initial Clinical Examination in Predicting Good Neurological Outcome in Cardiac Arrest Patients Treated with Targeted Temperature Management.

Lee JS(1), Bang HJ(1), Youn CS(1), Kim SH(2), Park S(3), Kim HJ(1), Park KN(1), Oh SH(1).

ABSTRACT

Prognostication studies of cardiac arrest patients have mainly focused on poor neurological outcomes. However, an optimistic prognosis for good outcome could provide both justification to maintain and escalate treatment and evidence-based support to persuade family members or legal surrogates after cardiac arrest. The aim of the study was to evaluate the utility of clinical examinations performed after return of spontaneous circulation (ROSC) in predicting good neurological outcomes in out-of-hospital cardiac arrest (OHCA) patients treated with targeted temperature management (TTM). This retrospective study included OHCA patients treated with TTM from 2009 to 2021. Initial clinical examination findings related to the Glasgow coma scale (GCS) motor score, pupillary light reflex, corneal reflex (CR) and breathing above the set ventilator rate were assessed immediately after ROSC and before the initiation of TTM. The primary outcome was good neurological outcome at 6 months after cardiac arrest. Of 350 patients included in the analysis, 119 (34%) experienced a good neurological outcome at 6 months after cardiac arrest. Among the parameters of the initial clinical examinations, specificity was the highest for the GCS motor score, and sensitivity was the highest for breathing above the set ventilator rate. A GCS motor score of >2 had a sensitivity of 42.0% (95% confidence interval [CI] = 33.0-51.4) and a specificity of 96.5% (95% CI = 93.3-98.5). Breathing above the set ventilator rate had a sensitivity of 84.0% (95% CI = 76.2-90.1) and a specificity of 69.7% (95% CI = 63.3-75.6). As the number of positive responses increased, the proportion of patients with good outcomes increased. Consequently, 87.0% of patients for whom all four examinations were positive experienced good outcomes. As a result, the initial clinical examinations predicted good neurological outcomes with a sensitivity of 42.0-84.0% and a specificity of 69.7-96.5%. When more examinations with positive results are achieved, a good neurological outcome can be expected.

4. Cochrane Database Syst Rev. 2023 May 22;5(5):CD004128. doi: 10.1002/14651858.CD004128.pub5.

Hypothermia for neuroprotection in adults after cardiac arrest.

Arrich J(1), Schütz N(1), Oppenauer J(1), Vendt J(2), Holzer M(1), Havel C(1), Herkner H(1).

ABSTRACT

BACKGROUND: Good neurological outcome after cardiac arrest is difficult to achieve. Interventions during the resuscitation phase and treatment within the first hours after the event are critical for a favourable prognosis. Experimental evidence suggests that therapeutic hypothermia is beneficial, and several clinical studies on this topic have been published. This review was originally published in 2009; updated versions were published in 2012 and 2016. OBJECTIVES: To evaluate the benefits and harms of therapeutic hypothermia after cardiac arrest in adults compared to standard treatment. SEARCH METHODS: We used standard, extensive Cochrane search methods. The latest search date was 30 September 2022. SELECTION CRITERIA: We included randomised controlled trials (RCTs) and quasi-RCTs in adults comparing therapeutic hypothermia after cardiac arrest with standard treatment (control). We included studies with adults cooled by any method, applied within six hours of cardiac arrest, to target body temperatures of 32 °C to 34 °C. Good neurological outcome was defined as no or only minor brain damage allowing people to live an independent life. DATA COLLECTION AND ANALYSIS: We used standard Cochrane methods. Our primary outcome was 1. neurological recovery. Our secondary outcomes were 2. survival to hospital discharge, 3. quality of life, 4. cost-effectiveness and 5. ADVERSE EVENTS: We used GRADE to assess certainty. MAIN RESULTS: We found 12 studies with 3956 participants reporting the effects of therapeutic

hypothermia on neurological outcome or survival. There were some concerns about the quality of all the studies, and two studies had high risk of bias overall. When we compared conventional cooling methods versus any type of standard treatment (including a body temperature of 36 °C), we found that participants in the therapeutic hypothermia group were more likely to reach a favourable neurological outcome (risk ratio (RR) 1.41, 95% confidence interval (CI) 1.12 to 1.76; 11 studies, 3914 participants). The certainty of the evidence was low. When we compared therapeutic hypothermia with fever prevention or no cooling, we found that participants in the therapeutic hypothermia group were more likely to reach a favourable neurological outcome (RR 1.60, 95% CI 1.15 to 2.23; 8 studies, 2870 participants). The certainty of the evidence was low. When we compared therapeutic hypothermia methods with temperature management at 36 °C, there was no evidence of a difference between groups (RR 1.78, 95% CI 0.70 to 4.53; 3 studies; 1044 participants). The certainty of the evidence was low. Across all studies, the incidence of pneumonia, hypokalaemia and severe arrhythmia was increased amongst participants receiving therapeutic hypothermia (pneumonia: RR 1.09, 95% CI 1.00 to 1.18; 4 trials, 3634 participants; hypokalaemia: RR 1.38, 95% CI 1.03 to 1.84; 2 trials, 975 participants; severe arrhythmia: RR 1.40, 95% CI 1.19 to 1.64; 3 trials, 2163 participants). The certainty of the evidence was low (pneumonia, severe arrhythmia) to very low (hypokalaemia). There were no differences in other reported adverse events between groups. AUTHORS' CONCLUSIONS: Current evidence suggests that conventional cooling methods to induce therapeutic hypothermia may improve neurological outcomes after cardiac arrest. We obtained available evidence from studies in which the target temperature was 32 °C to 34 °C.

5. Ther Hypothermia Temp Manag. 2023 May 22. doi: 10.1089/ther.2023.0015. Online ahead of print.

A Systematic Literature Review to Assess Fever Management and the Quality of Targeted Temperature Management in Critically Ill Patients.

Miao B(1), Skaar JR(1), O'Hara M(1), Post A(1), Kelly T(2), Abella BS(3).

ABSTRACT

Targeted temperature management (TTM) has been proposed to reduce mortality and improve neurological outcomes in postcardiac arrest and other critically ill patients. TTM implementation may vary considerably among hospitals, and "high-quality TTM" definitions are inconsistent. This systematic literature review in relevant critical care conditions evaluated the approaches to and definitions of TTM quality with respect to fever prevention and the maintenance of precise temperature control. Current evidence on the quality of fever management associated with TTM in cardiac arrest, traumatic brain injury, stroke, sepsis, and critical care more generally was examined. Searches were conducted in Embase and PubMed (2016 to 2021) following PRISMA guidelines. In total, 37 studies were identified and included, with 35 focusing on postarrest care. Frequently-reported TTM quality outcomes included the number of patients with rebound hyperthermia, deviation from target temperature, post-TTM body temperatures, and number of patients achieving target temperature. Surface and intravascular cooling were used in 13 studies, while one study used surface and extracorporeal cooling and one study used surface cooling and antipyretics. Surface and intravascular methods had comparable rates of achieving target temperature and maintaining temperature. A single study showed that patients with surface cooling had a lower incidence of rebound hyperthermia. This systematic literature review largely identified cardiac arrest literature demonstrating fever prevention with multiple TTM approaches. There was substantial heterogeneity in the definitions and delivery of quality TTM. Further research is required to define quality TTM across multiple elements, including achieving target temperature, maintaining target temperature, and preventing rebound hyperthermia.

ELECTROPHYSIOLOGY AND DEFIBRILLATION

1. J Cardiovasc Dev Dis. 2023 Apr 27;10(5):196. doi: 10.3390/jcdd10050196.

Differences in Automated External Defibrillator Types in Out-of-Hospital Cardiac Arrest Treated by Police First Responders.

Krammel M(1)(2), Eichelter J(1)(3), Gatterer C(1)(4), Lobmeyr E(5), Neymayer M(1)(6), Grassmann D(2), Holzer M(6), Sulzgruber P(1)(4), Schnaubelt S(1)(6).

ABSTRACT

Background: Police first responder systems also including automated external defibrillation (AED) has in the past shown considerable impact on favourable outcomes after out-of-hospital cardiac arrest (OHCA). While short hands-off times in chest compressions are known to be beneficial, various AED models use different algorithms, inducing longer or shorter durations of crucial timeframes along basic life support (BLS). Yet, data on details of these differences, and also of their potential impact on clinical outcomes are scarce. Methods: For this retrospective observational study, patients with OHCA of presumed cardiac origin and initially shockable rhythm treated by police first responders in Vienna, Austria, between 01/2013 and 12/2021 were included. Data from the Viennese Cardiac Arrest Registry and AED files were extracted, and exact timeframes were analyzed. Results: There were no significant differences in the 350 eligible cases in demographics, return of spontaneous circulation, 30-day survival, or favourable neurological outcome between the used AED types. However, the Philips HS1 and -FrX AEDs showed immediate rhythm analysis after electrode placement (0 [0-1] s) and almost no shock loading time (0 [0-1] s), as opposed to the LP CR Plus (3 [0-4] and 6 [6-6] s, respectively) and LP 1000 (3 [2-10] and 6 [5-7] s, respectively). On the other hand, the HS1 and -FrX had longer analysis times of 12 [12-16] and 12 [11-18] s than the LP CR Plus (5 [5-6] s) and LP 1000 (6 [5-8] s). The duration from when the AED was turned on until the first defibrillation were 45 [28-61] s (Philips FrX), 59 [28-81] s (LP 1000), 59 [50-97] s (HS1), and 69 [55-85] s (LP CR Plus). Conclusion: In a retrospective analysis of OHCA-cases treated by police first responders, we could not find significant differences in clinical patient outcomes concerning the respective used AED model. However, various differences in time durations (e.g., electrode placement to rhythm analysis, analysis duration, or AED turned on until first defibrillation) along the BLS algorithm were seen. This opens up the question of AED-adaptations and tailored training methods for professional first responders.

PEDIATRICS AND CHILDREN

1. Pediatr Emerg Med Pract. 2023 Jun 1;20(6):1-28. Print 2023 Jun.

A review of the 2020 update of the Pediatric Advanced Life Support guidelines.

Hoffmann RM(1), Miller AF(2).

ABSTRACT

Pediatric cardiac arrest presents an infrequent but high-stakes event for emergency clinicians, who need to maintain expertise in this area. Evidence regarding pediatric resuscitations has been accumulating substantially over the past decade and highlights the unique considerations and challenges when resuscitating children. This issue reviews resuscitation principles of children in cardiac arrest while addressing the newest evidence-based and best-practice recommendations by the American Heart Association.

EXTRACORPOREAL LIFE SUPPORT

1. Lancet Respir Med. 2023 May 22:S2213-2600(23)00137-6. doi: 10.1016/S2213-2600(23)00137-6. Online ahead of print.

Extracorporeal cardiopulmonary resuscitation versus conventional cardiopulmonary resuscitation in adults with cardiac arrest: a comparative meta-analysis and trial sequential analysis.

Low CJW(1), Ramanathan K(2), Ling RR(1), Ho MJC(1), Chen Y(3), Lorusso R(4), MacLaren G(5), Shekar K(6), Brodie D(7).

ABSTRACT

BACKGROUND: Although outcomes of patients after cardiac arrest remain poor, studies have suggested that extracorporeal cardiopulmonary resuscitation (ECPR) might improve survival and neurological outcomes. We aimed to investigate any potential benefits of using ECPR over conventional cardiopulmonary resuscitation (CCPR) in patients with out-of-hospital cardiac arrest (OHCA) and in-hospital cardiac arrest (IHCA). METHODS: In this systematic review and meta-analysis, we searched MEDLINE via PubMed, Embase, and Scopus from Jan 1, 2000, to April 1, 2023, for randomised controlled trials and propensity-score matched studies. We included studies comparing ECPR with CCPR in adults (aged ≥18 years) with OHCA and IHCA. We extracted data from published reports using a prespecified data extraction form. We did random-effects (Mantel-Haenszel) meta-analyses and rated the certainty of evidence using the Grading of Recommendations, Assessments, Developments, and Evaluations (GRADE) approach. We rated the risk of bias of randomised controlled trials using the Cochrane risk-of-bias 2.0 tool, and that of observational studies using the Newcastle-Ottawa Scale. The primary outcome was in-hospital mortality. Secondary outcomes included complications during extracorporeal membrane oxygenation, short-term (from hospital discharge to 30 days after cardiac arrest) and long-term (≥90 days after cardiac arrest) survival with favourable neurological outcomes (defined as cerebral performance category scores 1 or 2), and survival at 30 days, 3 months, 6 months, and 1 year after cardiac arrest. We also did trial sequential analyses to evaluate the required information sizes in the meta-analyses to detect clinically relevant reductions in mortality. FINDINGS: We included 11 studies (4595 patients receiving ECPR and 4597 patients receiving CCPR) in the meta-analysis. ECPR was associated with a significant reduction in overall in-hospital mortality (OR 0·67, 95% CI 0·51-0·87; p=0·0034; high certainty), without evidence of publication bias (pegger=0·19); the trial sequential analysis was concordant with the meta-analysis. When considering IHCA only, in-hospital mortality was lower in patients receiving ECPR than in those receiving CCPR (0·42, 0·25-0·70; p=0·0009), whereas when considering OHCA only, no differences were found (0·76, 0·54-1·07; p=0·12). Centre volume (ie, the number of ECPR runs done per year in each centre) was associated with reductions in odds of mortality (regression coefficient per doubling of centre volume -0·17, 95% CI -0·32 to -0·017; p=0·030). ECPR was also associated with an increased rate of short-term (OR 1·65, 95% CI 1·02-2·68; p=0·042; moderate certainty) and long-term (2·04, 1·41-2·94; p=0·0001; high certainty) survival with favourable neurological outcomes. Additionally, patients receiving ECPR had increased survival at 30-day (OR 1·45, 95% CI 1·08-1·96; p=0·015), 3-month (3·98, 1·12-14·16; p=0·033), 6-month (1·87, 1·36-2·57; p=0·0001), and 1-year (1·72, 1·52-1·95; p<0·0001) follow-ups. INTERPRETATION: Compared with CCPR, ECPR reduced in-hospital mortality and improved long-term neurological outcomes and post-arrest survival, particularly in patients with IHCA. These findings suggest that ECPR could be considered for eligible patients with IHCA, although further research into patients with OHCA is warranted.

2. J Cardiovasc Med (Hagerstown). 2023 May 18. doi: 10.2459/JCM.0000000000001503. Online ahead of print.

Extracorporeal membrane oxygenation-facilitated resuscitation in out-of-hospital cardiac arrest: a meta-analysis of randomized controlled trials.

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ABSTRACT

AIMS: It remains unclear whether extracorporeal cardiopulmonary resuscitation (ECPR) could improve neurological outcomes in patients with out-of-hospital cardiac arrest (OHCA) compared with conventional cardiopulmonary resuscitation (CCPR). METHODS: We conducted a systemic search for randomized controlled trials (RCTs) comparing the efficacy of ECPR versus CCPR for OHCA until February 2023. The main end points were 6-month survival, and 6-month and short-term (in-hospital or 30-day) survival with favorable neurological outcome, defined as a Glasgow-Pittsburg cerebral performance category (CPC) score of 1 or 2. RESULTS: We identified four RCTs including a total of 435 patients. In the included RCTs, the initial cardiac rhythms were ventricular fibrillation in most cases (75%). There was a tendency towards improved 6-month survival and 6-month survival with favorable neurological outcome in ECPR although it did not reach statistical significance [odds ratio (OR): 1.50; 95% confidence interval (CI): 0.67 to 3.36, I2 = 50%, and OR: 1.74; 95% CI: 0.86 to 3.51, I2 = 35%, respectively]. ECPR was associated with a significant improvement in short-term favorable neurological outcomes without heterogeneity (OR: 1.84; 95% CI: 1.14 to 2.99, I2 = 0%). CONCLUSION: Our meta-analysis of RCTs revealed that there was a tendency towards better mid-term neurological outcomes in ECPR and that ECPR was associated with a significant improvement in short-term favorable neurological outcomes compared with CCPR.

3. Prehosp Emerg Care. 2023 May 22:1-14. doi: 10.1080/10903127.2023.2216786. Online ahead of print.

Association between case volumes of extracorporeal life support and clinical outcome in out-of-hospital cardiac arrest.

Choi S(1)(2), Hong KJ(2)(3), Lee SGW(2)(4), Kim TH(2)(5), Shin SD(3)(6)(7), Song KJ(3)(7)(8), Ro YS(3)(7), Jeong J(7)(9), Park JH(3)(6)(7), Lee GM(6)(7).

ABSTRACT

AimExtracorporeal life support (ECLS) for out-of-hospital cardiac arrest (OHCA) is increasing. There is little evidence identifying the association between hospital ECLS case volumes and outcomes in different populations receiving ECLS or conventional cardiopulmonary resuscitation (CPR). The goal of this investigation was to identify the association between ECLS case volumes and clinical outcomes of OHCA patients. MethodsThis cross-sectional observational study used the National OHCA Registry for adult OHCA cases in Seoul, Korea between January 2015 and December 2019. If the ECLS volume during the study period was >20, the institution was defined as a high-volume ECLS center. Others were defined as low-volume ECLS centers. Outcomes were good neurologic recovery (cerebral performance category 1 or 2) and survival to discharge. We performed multivariate logistic regression and interaction analyses to assess the association between case volume and clinical outcome. ResultsOf the 17,248 OHCA cases, 3,731 were transported to high-volume centers. Among the patients who underwent ECLS, those at high-volume centers had a higher neurologic recovery rate than those at low-volume centers (17.0% vs. 12.0%). The adjusted OR for good neurologic recovery was 2.22 (95% confidence interval (CI): 1.15-4.28) in high-volume centers compared to low-volume centers. For patients who received conventional CPR, high-volume centers also showed higher survival-to-discharge rates (adjusted OR of 1.16, 95%CI: 1.01-1.34).ConclusionsHigh-volume ECLS centers showed better neurological recovery in patients who underwent ECLS. High-volume centers also had better survival-to-discharge rates than low-volume centers for patients not receiving ECLS.

EXPERIMENTAL RESEARCH

No articles identified.

CASE REPORTS

1. Dent Clin North Am. 2023 Jul;67(3):503-506. doi: 10.1016/j.cden.2023.02.030. Epub 2023 Apr 4.
A Patient with a History of Myocardial Infarction and a Stent Presenting for Full Mouth Extractions.
Mistry N(1), Kufta K(1), Mupparapu M(2), Panchal N(3).
ABSTRACT
The scenario presented is of a patient in the dental chair who had history of myocardial infarction and history of stent placed in the left anterior descending coronary artery who now presents with acute chest pain, chest tightness, and extreme dizziness. Confirming cardiopulmonary arrest and beginning basic life support are the first steps in the management followed by defibrillation, advanced cardiac life support, post-resuscitation care, and long-term management.

2. Clin Pract. 2023 May 15;13(3):616-620. doi: 10.3390/clinpract13030056.
Survival with Good Neurological Outcome despite Prolonged Cardiopulmonary Resuscitation and Extreme Acidosis after Out-of-Hospital Cardiac Arrest Due to Acute Myocardial Infarction: A Case Report and Review of the Literature.
Störmann S(1), Busygina K(1), Hein-Rothweiler R(2), Steffen J(2), Förderreuther S(3), Salein N(4), Angstwurm MW(1).
ABSTRACT
We report the case of a 49-year-old male who suffered from a myocardial infarction with subsequent cardiac arrest. The emergency medical team began cardiopulmonary resuscitation, including defibrillation of ventricular fibrillation. Although a return of spontaneous circulation was achieved after approximately 30 min of continued efforts, the patient went back into cardiac arrest on the way to the hospital and resuscitation had to be resumed. On admission, the patient was severely acidotic with a pH of 6.67, lactatemia of 19 mmol/L, and pronounced hypercapnia (pCO2 127 mmHg). Despite the poor prognosis, all possible efforts including coronary intervention and therapeutic hypothermia were carried out and the patient made a quick recovery with discharge from the intensive care unit on day 5. Survival of extreme acidosis, such as in this case, is rare. This is the first report of survival with good neurologic outcome in a patient with myocardial infarction, cardiac arrest, and pH of under 6.7 on admission at the clinic.

3. Cureus. 2023 Apr 19;15(4):e37816. doi: 10.7759/cureus.37816. eCollection 2023 Apr.
Massive Pulmonary Embolus Following a Hemorrhagic Stroke: A Thrombolysis Therapy Dilemma.
Akanmode OJ(1), Akanmode AM(2), Olusoji RA(2), Osanoto AS(3).
ABSTRACT
Pulmonary embolism varies in presentation with factors such as embolus size and pre-existing comorbidities contributing significantly. Despite the availability of several options to treat pulmonary embolism, these options significantly decrease when a massive pulmonary embolism causes a cardiac arrest in the setting of a recent hemorrhage thalamic stroke. We reviewed the current literature and presented a case report. In addition, we presented seven cases of pulmonary embolus where thrombolysis was used despite an absolute contraindication to thrombolysis, and the patients had successful outcomes.

4. Medicina (Kaunas). 2023 May 19;59(5):981. doi: 10.3390/medicina59050981.
Local Anesthetic Systemic Toxicity Following Inadvertent Intravenous Levobupivacaine Infusion in Infants: A Case Report.

Jermolajevaite J(1), Razlevice I(1), Gurskis V(2), Grinkeviciute DE(2), Lukosiene L(1), Macas A(1).
ABSTRACT

Background and objectives: Local anesthetic systemic toxicity (LAST) in children is extremely rare, occurring at an estimated rate of 0.76 cases per 10,000 procedures. However, among reported cases of LAST in the pediatric population, infants and neonates represent approximately 54% of reported LAST cases. We aim to present and discuss the clinical case of LAST with full clinical recovery due to accidental levobupivacaine intravenous infusion in a healthy 1.5-month-old patient, resulting in cardiac arrest necessitating resuscitation. Case presentation: A 4-kilogram, 1.5-month-old female infant, ASA I, presented to the hospital for elective herniorrhaphy surgery. Combined anesthesia was planned, involving general endotracheal and caudal anesthesia. After anesthesia induction, cardiovascular collapse was noticed, resulting in bradycardia and later cardiac arrest with EMD (Electromechanical Dissociation). It was noticed that during induction, levobupivacaine was accidentally infused intravenously. A local anesthetic was prepared for caudal anesthesia. LET (lipid emulsion therapy) was started immediately. Cardiopulmonary resuscitation was carried out according to the EMD algorithm, which lasted 12 min until spontaneous circulation was confirmed and the patient was transferred to the ICU. In ICU, the girl was extubated the second day, and the third day she was transferred to the regular pediatric unit. Finally, the patient was discharged home after a total of five days of hospitalization with full clinical recovery. A four-week follow-up has revealed that the patient recovered without any neurological or cardiac sequelae. Conclusions: The clinical presentation of LAST in children usually begins with cardiovascular symptoms because pediatric patients are already under general anesthesia when anesthetics are being used, as was the case in our case. Treatment and management of LAST involve cessation of local anesthetic infusion, stabilization of the airway, breathing, and hemodynamics, as well as lipid emulsion therapy. Early recognition of LAST as well as immediate CPR if needed and targeted treatment for LAST can lead to good outcomes.

5. J Int Med Res. 2023 May;51(5):3000605231175635. doi: 10.1177/03000605231175635.

Sudden cardiac death caused by a right coronary artery aneurysm complicated with acute myocardial infarction: a case report.

Wu P(1), Zhang H(1), Ren P(1), Luo S(1), Zhao X(1).

ABSTRACT

Coronary aneurysms are defined as coronary artery ectasia (CAE) more than 1.5 times the normal adjacent segment diameter or the maximum coronary artery diameter. Although most CAE patients are asymptomatic, some patients present with acute coronary syndrome (ACS), such as angina pectoris, myocardial infarction (MI), and even sudden cardiac death. Sudden death due to coronary artery dilatation is very rare. However, we report a case of a patient with aneurysm-like dilatation of both the left and right coronary arteries, with acute inferior ST segment elevation myocardial infarction and sudden death due to third-degree atrioventricular block. After cardiopulmonary resuscitation, the patient underwent emergency coronary intervention. After thrombus aspiration and intracoronary thrombolysis in the right coronary artery, the atrioventricular block returned to normal on the fifth day of hospitalization. Following anticoagulant therapy, coronary angiography was repeated and showed that the thrombus had disappeared. The patient is recovering well after active rescue at the time of writing.