CASE REPORT

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Out-of-hospital cardiac arrest treated with prehospital double sequential external defibrillation during eCPR in refractory VF — a case report



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Abstract

Background Double sequential external defibrillation (DSED) has demonstrated increased survival with good neurological outcome in a recent randomized controlled trial. DSED has not been studied in patients with extracorporeal cardiopulmonary resuscitation (eCPR).

Case We present the first case of prehospital eCPR with ongoing refractory ventricular fibrillation (VF), terminated by DSED. After six shocks, return of spontaneous circulation was initially achieved; however, the patient went into recurrent VF. ECPR was performed prehospital, with VF still refractory after three more shocks. DSED successfully terminated VF and showed a further increase in etCO₂ and near-infrared spectroscopy cerebral oximetry values.

Conclusion DSED can be a sufficient strategy for patients in refractory VF while on eCPR and should be evaluated in further studies.

Keywords: Resuscitation, Extracorporeal cardiopulmonary resuscitation, Double sequential external defibrillation, Advanced life support, Case report

Background

Out-of-hospital cardiac arrest (OHCA) affects about 60/100,000 persons in Europe/year, with 20% having an initial shockable rhythm [1]. Initial shockable rhythm is significantly associated with return of spontaneous circulation and survival to hospital discharge with good neurological outcome [2, 3].

Refractory ventricular fibrillation (VF) is defined by current guidelines as ongoing VF after three defibrillations [4]. Patients with refractory VF represent a typical cohort included in recent extracorporeal cardiopulmomary resuscitation (eCPR) trials [5]. Recent meta-analyses of randomized controlled trials (RCTs) have found increased survival in selected patients undergoing eCPR [6]. If eCPR is not available the concept of early double sequential external defibrillation (DSED) has demonstrated an increase in termination of VF and survival with good neurological outcome [7].

After an intensive literature search, there is no published report on the prehospital use of DSED during ongoing eCPR in refractory VF. In accordance with the CARE guidelines [8], we present the case of a 63-year-old patient, suffering from OHCA with refractory/recurrent VF. Prehospital eCPR was performed, guided by transesophageal echocardiography. Ongoing refractory VF during eCPR was successfully terminated using DSED.

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on laboratory standards their observations form the template for lifesaving clinical trials and drugs in development Strategies to Improve Cardiac Arrest Survival Institute of Medicine, Board on Health Sciences Policy, Committee on the Treatment of Cardiac Arrest: Current Status and Future Directions, 2015-09-29 Cardiac arrest can strike a seemingly healthy individual of any age race ethnicity or gender at any time in any location often without warning Cardiac arrest is the third leading cause of death in the United States following cancer and heart disease Four out of five cardiac arrests occur in the home and more than 90 percent of individuals with cardiac arrest die before reaching the hospital First and foremost cardiac arrest treatment is a community issue local resources and personnel must provide appropriate high quality care to save the life of a community member Time between onset of arrest and provision of care is fundamental and shortening this time is one of the best ways to reduce the risk of death and disability from cardiac arrest Specific actions can be implemented now to decrease this time and recent advances in science could lead to new discoveries in the causes of and treatments for cardiac arrest However specific barriers must first be addressed Strategies to Improve Cardiac Arrest Survival examines the complete system of response to cardiac arrest in the United States and identifies opportunities within existing and new treatments strategies and research that promise to improve the survival and recovery of patients The recommendations of Strategies to Improve Cardiac Arrest Survival provide high priority actions to advance the field as a whole This report will help citizens government agencies and private industry to improve health outcomes from sudden cardiac arrest across the United States Workbook for EMT Prehospital Care - Revised Reprint Mark C. Henry, Edward R. Stapleton, Eric Niegelberg, 2006-11-08 The Revised Reprint is now updated to reflect the new 2005 emergency cardiac care guidelines It includes approximately 1 950 questions in a variety of formats multiple choice true false matcing fill in the blank case studies in every chapter to help you picture yourself as a street EMT complete coverage of the cognitive obectives of the U S DOT EMT Basic Curriculum to give you the knowledge and critical thinking skills you need for success in exams and in the field anatomy labeling questions crossword puzzles and a CPR Review to make reviewing convenient and fun and National Registry Skill Sheets in an appendix to aid in skills review and practice **Comprehensive Guide to Pre-hospital** Skills Alexander M. Butman, 1995 The most comprehensive prehospital care skills reference on the market It definitively

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