

Teaching cardiopulmonary cerebral resuscitation

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ARTICLE INFORMATION

Received: April 18, 2017

Accepted: May 18, 2017

Competing interests

The authors declare no competing interests

Acronyms

AHA: American Heart Association

CRA: cardiorespiratory arrest

CPR: cardiopulmonary resuscitation

ABSTRACT

The cardiorespiratory arrest is one of the most serious and compromised situations in life. The purpose of this work is to make an update on the teaching of cardiopulmonary cerebral resuscitation. The website of the National Medical Library of the United States (PubMed) was visited with the following keywords: teaching and reanimation, and with the filter activated for the last five years, in humans and complete text. The coronary heart disease is the leading cause of death in the world. Its most severe manifestation is sudden death, and ventricular fibrillation is the most frequent electrocardiographic pace. Its main treatment is the effective cardiopulmonary resuscitation and early defibrillation. It seems necessary to establish effective methods of instruction, where the use of simulated clinical scenarios can be a useful tool to enhance learning and assessment of terminal skills for the medicine graduated.

Key words: Teaching, Cardiopulmonary cerebral resuscitation

La enseñanza de la reanimación cardiopulmonar y cerebral

RESUMEN

Una de las situaciones más graves y comprometidas para la vida, es la parada cardiorrespiratoria. El objetivo de esta charla es hacer una actualización sobre la enseñanza de la reanimación cardiopulmonar y cerebral. Se visitó la página web de la Biblioteca Médica Nacional de los Estados Unidos (PubMed) con las siguientes palabras clave en inglés: teaching AND reanimation, y con el filtro activado para los últimos cinco años, en humanos y a texto completo. La enfermedad coronaria es la primera causa de muerte en el mundo. Su manifestación más grave es la muerte súbita, y la fibrilación ventricular es el ritmo electrocardiográfico más frecuente. Su principal tratamiento es la reanimación cardiopulmonar efectiva y la desfibrilación precoz. Parece necesario instaurar métodos más eficaces de instrucción, donde el empleo de escenarios clínicos simulados puede ser una herramienta útil para mejorar el aprendizaje, así como la evaluación de las competencias terminales del egresado de medicina.

Palabras clave: Enseñanza, Reanimación cardiopulmonar y cerebral

On-Line Versions:
Spanish - English

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INTRODUCTION

Cardiorespiratory arrest (CRA), is one of the most serious and life-threatening situations. CRA is defined as the cessation of cardiac mechanical activity and spontaneous breathing¹.

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One cannot speak of cardiopulmonary and cerebral resuscitation without mentioning Dr. Peter Safar, a pioneer in promoting teaching in this field. Dr. Safar was born in Vienna in 1924 and died in Pennsylvania on August 3, 2003. Coronary artery disease is the leading cause of death worldwide and sudden death is its most serious manifestation, representing more than 60% of cases. Ventricular fibrillation (VF) is thought to be the most frequent electrocardiographic rhythm during sudden death. Its main treatment is effective CPR and early defibrillation^{1,2}. Basic CPR increases defibrillation success by four to seven times¹.

Sudden death, in most cases, occurs in healthy people, suddenly and unexpected, at home or in the street. Although it can be potentially reversible, many times, emergency personnel arrive when it is too late³ for the victim.

CPR is a set of sequential, internationally standardized maneuvers, designed to replace and restore breathing, circulation and central nervous system integrity. This procedure will be likely to prevent neurological sequelae, only when applied in the first few minutes.

The objective of the conference held at this Symposium was to update some aspects about the teaching of cardiopulmonary cerebral resuscitation.

INTERESTING FACTS

CRA occurs in nearly 375,000 adults in Europe every year. A high percentage occur out-of-hospital and frequently the first-aiders are relatives, co-workers, teachers or bystanders^{1,3}.

In Spain, around 25,000 people die of acute myocardial infarction before receiving medical assistance. Despite the improvement in emergency services, they will never be able to reach all the cases quickly enough.

At present, less than 30% of out-of-hospital CRAs are initially resuscitated by lay people⁴. Early basic CPR improves prognosis of CRA in both, children and adults.

In the case of bystander-witnessed cardiorespiratory arrest, CPR maneuvers increase survival chances by seven times^{1,3}.

Several studies have shown that the time elapsed

between CRA and CPR is a critical prognostic factor; therefore, first-aiders assisting anyone in CRA should keep CPR maneuvers until emergency personnel take over.

Regardless of their professional qualification or cultural level, general population should be able to learn and perform effective basic CPR. In the U.S., nearly 18 million people per year are estimated to receive basic CPR training⁴.

In Spain, a great number of health professionals have been trained in advanced CPR through the training programs offered by the national plan of the Spanish Society of Intensive and Critical Medicine, and Adult Coronary Units, and the training program of the Spanish Group of Pediatric and Neonatal CPR in children. So it is pivotal for medical teams to have CPR knowledge and skills to improve survival rates⁴.

There are many webpages and websites to inform and teach people. The Mexican Foundation for RCP founded in 1990 to promote, broadcast and facilitate medical and prehospital advice in the community, teaches CPR and first-aid to the Health Sector and the general community and provides advice to companies about the need for civil-protection squads.

The mission of the First International Training Center in Mexico, accredited by the American Heart Association (AHA) is to grow leadership in both public and professional training; ranging from average accidents to CPA using cutting-edge, evidence-based techniques and equipment.

Their goal is to become the best CPR and Emergency Cardiovascular Care training center; with a reputation based on their teaching-techniques results, which provides added value to training attendees.

The AHA offers updating courses on arrhythmias and Basic/Advanced Life Support for specialists. However, training in CRA prevention and basic CPR maneuvers in medical residencies remains poorly developed in general¹.

This training is supposed to teach students how to act systematically in emergency situations, insisting on an orderly application of measures^{2,4}.

- First, to apply security measures to avoid added risks.
- To distinguish between mild and life-threatening situations.
- To understand the importance of communication with emergency systems.
- To learn the basic-healing essentials in the emergency room without any vital risk.

- To learn basic CPR measures in practice.
- Basic CPR training for residents should include maneuvers appropriate for both, children and adults. Insist on the most important of them and highlight that preventive, simple measures are the most useful.

In the study on basic CPR, published in the “*Revista Médica Chilena*”⁴, 41 physicians and 30 sixth-year medical trainee interns were evaluated (only theoretical knowledge) using a multiple-choice test. Only 39% of doctors and 10% of interns passed the exam.

Another investigation aiming to evaluate the level of theoretical knowledge and practical skills in CPR in a sample of residents in Spain³, concluded that it seems necessary to develop more effective teaching methods, where the use of simulated scenarios can be a useful tool to improve learning, as the standard-competences evaluation for medical graduates is.

The Gjøvik University College initiated simulation training for the Nursing Staff when the SimMan simulator became available in 2002. Participants acquired valuable experience thanks to full-scale simulations. This activity allowed the teaching staff to include the use of simulation training to the curriculum.

In the United States, Accreditation Council for Graduate Medical Education (ACGME) defined CPR as one of the generic competences of medical graduates. In Spain, teaching CPR is part of the curricular program in the main schools of this discipline. However, a CPR skills certification is not required to work in many health care institutions¹.

Several articles have dealt with the problem worldwide. Studies have been conducted in England, the United States, Japan, New Zealand, Sweden and China, and they draw the same conclusion: there is a lack of CPR training in undergraduate medical education programs; they feel uncomfortable

with resuscitation and make mistakes.

Likewise, different reports show that medical students consider important and necessary to receive more training in practical resuscitation skills². In addition, it is known that the decline of theoretical knowledge already begins six weeks after the end of a course and that it keeps progressing with time.

CONCLUSIONS

It is critical to develop more effective methods of instruction, where the use of simulated clinical scenarios can be a useful tool to improve learning, as it is the standard-competences evaluation for medical graduates.

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