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Review Article

Cardiopulmonary Resuscitation Procedures Behavior in Emergency Services at the Florida Hospital (2007-2017)

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Abstract

Cardiopulmonary resuscitation (CPR) or cardiorespiratory resuscitation (RCR) is a set of temporary and internationally normalized maneuvers designed to ensure the oxygenation of vital organs when the blood circulation of a person stops suddenly, regardless of the cause of death. cardiorespiratory arrest. A retrospective longitudinal descriptive study was carried out in which 276 cases of patients who presented cardiorespiratory arrest in the Emergencies service and Emergent Intensive Care Unit of the "Manuel Piti fajardo" Municipal Teaching Hospital, were evaluated in the period from January 2007 to December. 2017, with the objective of determining the survival behavior of cardiopulmonary resuscitation. The variables studied included age, sex, pathological history, neurological evolution, and hospital survival. The information obtained through the review of patient records was incorporated into a database. It was found that senile patients with associated pathological background represented a low level of survival after cardiopulmonary resuscitation.

Keywords: cardiorespiratory arrest; post cardiopulmonary resuscitation; hospital survival

Introduction

The cardiopulmonary resuscitation (CPR) are the procedures carried out to reset circulation and ventilation in a patient with cardiac arrest and also includes measures for the restoration of higher neurological functions. It also includes a set of temporary and internationally standardized maneuvers designed to ensure oxygenation of vital organs when a person's blood circulation suddenly stops, regardless of the cause of the cardiorespiratory arrest. 1 Conceptually, cardiorespiratory arrest (CPA) is the cessation of the mechanical activity of the heart and respiratory function [2-4], and is confirmed in the absence of neurological response, breathing and pulse. [5-7]

Sudden death is considered to be Unplanned cardiac arrest that occurs in less than 1 hour of initiates the symptoms in patients whose situation prior no toward foreseeable a fatal outcome. The term "unexpected or unforeseen" indicates that that last heartbeat should not carry to the death, for differentiate it of the that do stop in he stadium final and irreversible of an incurable chronic disease. [8-9-10]

This problem, included in the International Classification of Diseases and Related Health Problems (ICD-10): (I.46.1: Sudden cardiac death, thus described; R95: Sudden Infant Death Syndrome, (R96: Other sudden deaths of unknown cause), represents, in the opinion of experts, one of the main challenges for health systems in the present century, this statement is justified by its high incidence. Worldwide, there are between 4 to 5 million of events annually, which translates into 10 events for every minute spent reading these lines.

In the United States, sudden death is the number one "killer," causing 400,000 deaths annually, with an incidence that exceeds deaths caused by stroke, lung cancer, HIV-AIDS infection, and breast cancer. by only cite some examples. In Cuba to leave of the jobs of Research conducted over the past 22 years by the Sudden Death Research Group (GIMUS) and information published by the statistical yearbook of the Ministry of Public Health (MINSAP), We estimate for he year 2016 the occurrence of 12 231 events sudden, meaning 33 deaths diaries and 1 episode each 44 min, with a Rate of 108.8 x 100,000 population, representing he 12.3 % of the deaths natural occurred in that year.

More than 70% of all sudden deaths are of cardiac origin and of these, nearly 80% % are attributed to the heart disease ischemic in special to the Heart attack Sharp of the Myocardial infarction (AMI). In Cuba, unlike other countries, knowledge about the causes of sudden death has increased in recent years, but in many cases the effectiveness of cardiopulmonary

resuscitation, the prognosis and the in-hospital survival of these patients are still unknown. [11]

TO finals of the years fifty, Peter Safar and James Elan developed he concept of the "breathing mouth to mouth". In 1960, William B. Kouwenhoven, Guy Knickerbocker and Jim Jude described the advantages of chest compression to induce artificial circulation. [12-13] Safar then established the CPR protocol, 14 which continued to be assumed by the American Heart Association.

Between 1991 and 2000, a single rescuer alternated 15 chest compressions and 2 breaths for an adult or child over 8 years of age; compressions were delivered at a rate of 60 per minute. For an infant, four initial breaths (two per minute) were delivered. during he calculation; then Others two after of the past of the alarm) and HE Alternating five chest compressions and one breath. A single rescuer without resources would perform CPR for one minute before calling for help; if there were two rescuers, they would alternate five compressions and a breathing, so much in a adult as in a baby [15- 16- 17].

In 2000 HE abandonment he term "massage cardiac" by «compressions "thoracic".

Basic life support is considered for a single rescuer as a sequence of actions summarized with the initials CAB and applied prior to the arrival of specialized emergency services:

C, from the English circulation for the assessment of circulation, including chest compressions

TO, of the English airway, implies the opening either release of the ways B airways, from the English breathing, the initiation of artificial ventilation

Safar mnemonic acronym that begins with CABD: circulation, airway, breathing, defibrillation [18].

From 2010, he algorithm of the ILCOR (International Liaison Committee on Resuscitation: International Liaison Committee on Resuscitation shows interest in a new sequence for rescuers, starting with the compressions cardiac, then the assessment of the airways and finally initiation of artificial ventilation. [19-20]

It is important to clarify an aspect that, perhaps because it is obvious, has not been addressed: during training or training, cardiopulmonary resuscitation practices No HE must perform in people healthy (already be students either (hired apprentices) but in the known simulators especially designed for such effect. There is a relative level of risk in performing CPR on non-patients (i.e., someone who does not have signs and symptoms of cardiac arrest). CPR poses mechanical, biological, and functional risks, such as trauma, infection, and impairment. Exposure to these risks is only acceptable after evaluating the cost/benefit ratio. Therefore, it is unacceptable to expose a trainee to CPR when there are efficient, appropriate, and accessible resources, such as CPR simulators and barrier methods. [21]

Design Methodological

A retrospective longitudinal descriptive study was conducted to identify the clinical behavior of patients undergoing Cardiopulmonary Resuscitation procedures. admitted in the Unit of Care Intensive Emerging (UCIE) of the Manuel Piti Fajardo Municipal University Hospital of the municipality of Florida, in the period from January 2007 to December 2017. The study universe consisted of 276 patients who received Cardiopulmonary Resuscitation therapy at the Manuel Piti Fajardo Municipal University Hospital of the Municipality of Florida during the aforementioned period of time.

HE included in the investigation all the patients admitted subjected to CPR procedures that met the following criteria:

1- Patients older of 18 years that suffered stop cardiorespiratory in the UCIE Patients who met the following criteria were excluded from the study:

1- Patients that entered in others services of the hospital

2- Patients whose relatives did not cooperate in the preparation of the study.

Once the patients were identified in the hospital statistics department, the medical records were extracted from the archive department.

Of each patient HE will require the following variables:

- Age fulfilled in years (variable quantitative discreet). Grouping together in decennial ages starting at 18 years old.

- Sex (variable qualitative dichotomous) in their two categories biological.

- Background pathological personal (variable qualitative nominal)

- Evolution neurological of the patient then of the CPR (variable qualitative nominal), which will allow the patient to be categorized into one of the following states.

1.Excellent: All patients who are discharged without neurological deficit , do not suffer complications and stay up to 10 days.

2.Good: All patients who are discharged without neurological deficit , but who suffer some complication of any apparatus or system and stay longer than 10 days. 3. Average: All patients with neurological deficit , regardless of their stay and whether or not complications appear.

4. Bad: All the patients deceased.

This work will be carried out with absolute anonymity of the results and will not constitute harm or risk for patients. The informed consent of the corresponding Heads of Service was also obtained, using the informed consent model. (ANNEX 1)

In the initial stage of The investigation was first carried out by the organization of the information; a bibliographic review was carried out in the teaching department of the Municipal Hospital to through of the systems Medline and Lilacs, So as the search engines of Internet, on the Yahoo and Google sites , in accordance with the fulfillment of the objectives.

To obtain the primary data, a data collection form was prepared in which the main variables were collected: age, sex, personal pathological history. and state to the graduation of the patient (EXHIBIT 2); the which were taken of the medical records of each patient.

The data was processed on a Samsung brand laptop , a database was created data automated using a sheet of calculation of the program Microsoft Excel V. 2000. The percentage will be used as summary measures, and the independence and homogeneity tests will be performed using the nonparametric chi-square and Kolmogorov - Smirnov methods. The results were expressed in statistical tables and graphs.

Results And Discussion

Resuscitation procedures in the Emergency Services of Florida Hospital (January 2007 - December 2017)

Groups of ages (years)	No.	%
18 – 29	12	4.35
30 – 39	20	7.24
40 - 50	34	12.3
51- 60	45	16.3
61- 70	58	21
71- 80	60	21.7
Further of 80 years	47	17
Total	276	100
Fountain: form		

Board 1: Distribution of the patients according to ages

He cluster of ages predominant It turned out he from 71-80 years (21.7 %) continued of the of 61-70 years (21%). The least represented were those aged 18-29 (4.35%).

From he 1st. of January of 2007 until he 31 of December of 2017 HE record a total of 11 4007 visits to the Emergency Department of the "Manuel Piti Fajardo" Municipal Hospital; admissions from the DE-UCIE to critical care units was 1 720 patients, of they HE recorded as patients post resurrected 276 cases, with an incidence in these areas of 46.51 per 1,000 admitted.

Finally 1 of Every 6th patient survived on discharge hospitable. Survival on discharge is elderly between the 61 and 70 years, in equal proportion to the survival initial and who die.

The group age group that answered to CPR was the older adult population and elderly (Table 1), saying worth HE finds related with he pattern epidemiological of the guy of patient who goes to the Municipal Hospital of Florida and the progressive increase in the population senile, besides of count with technology and media capable of give increasing chances of survival for patients insured by the system. Survival to the high is elderly between the 61 and 70 years, in equal proportion to the survival initial and that die. The age average of survival post CPR was 61.8 years, in agreement with studies epidemiological consulted. [22]

Other studies report that patients who presented cardio-respiratory arrest in a hall of emergency They had better odds of survival that those that occurred in the ICU and rooms of hospitalization, a situation that could explain by the state critical to the income to the unit of care intensive, and in Others areas is to lack of training of the staff in the realization of maneuvers of CPR, that HE associates with a poor prognosis. [23]

It was observed that older patients are those who respond best to the maneuvers. of CPR, Hunziker S finds a mortality significant in the older 80 years old. [24]

Sex	No.	%
Male	186	67.4
Female	90	32.6
Total	276	100
Fountain: form		

Board 2: Distribution of the patients according to sex.

The majority of the patients surveyed were male with 186 patients (67.4%), followed by female with 90 patients (32.6%).

Criterion that coincides with what was proposed by Álvarez Parada and Casado Flores 25, who find a predominance of the sex male in the application of the techniques of CPR in 80% of cases.

In Spain, in a job carried away to cape during the years 2014 and 2015 HE found an incidence of 10 cases per million inhabitants per year, although more recent data indicate that the figure can be elderly, between 20 and 30, it that would suppose Approximately 700 to 1000 new patients with cardiorespiratory arrest per year; 75% of them are male. [26]

In the United States, 10,000-12,000 CPR procedures are performed annually, with a mortality rate of 30%. before hospital admission, and 40% in male patients. [27]

Cardiorespiratory arrest is clearly more frequent in male patients, between 55 and 75 years, being the cause most frequent the accidents vascular encephalic disorders, followed by cardiovascular disorders, with special mention to Acute Myocardial Infarction, the incidence of which is increasing dramatically. 28 In our country, these are acute myocardial infarction, hydroelectrolytic disorders and alterations of the nervous system.

Background	No.	%
Hypertension Arterial	59	21.4
Heart disease Ischemic (CHF)	49	17.8
Diabetes COPD Mellitus	22	7.9
Insufficiency Renal Chronicle in stadium terminal	104	37.6
	42	15.2
Total	276	100
Fountain: form		

Table 3: Distribution of patients according to their personal pathological history.

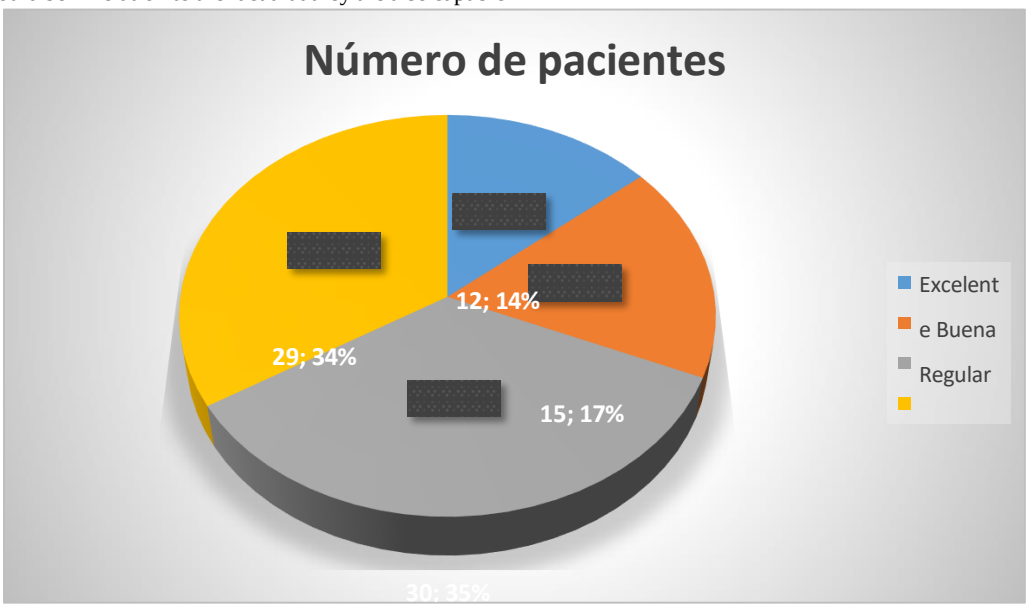
The distribution of patients according to their personal pathological history showed a predominance of patients with COPD with 104 patients for 37.6%, followed by patients with Arterial Hypertension with 59 cases for 21.4%.

The admission of elderly patients associated with a variety of pathological backgrounds is a growing constant in health institutions in developed countries and even in developing countries such as Peru and Cuba. [29-30-31]

Different results are reported by other authors who indicate that survival improved in patients with CHF, while other authors found chronic obstructive pulmonary disease (COPD) as a good prognostic factor for the disease. survival post CPR, based in he made of that he state of adaptation to the hypoxia and hypercapnia, allowing it to respond better to resuscitation and advanced life support. [32-33]

He made of that the patients with insufficiency renal chronicle have a factor important in survival would be in relation to the fact that they are also capable of withstanding states of hypoxia by long time, by the fact of possess anemias chronicles, by On the other hand, hydroelectrolytic disorders are an identifiable cause of cardiac arrest. [34]

The most frequent admission diagnosis recorded in the DE-UCIE in patients who initially responded to the maneuvers of CPR, were: shock with 13.7 % for a total of 38 cases, encephalopathy (cerebrovascular accident (CVA), subarachnoid hemorrhage (SAH), metabolic alteration) with 15.2% with a total of 42 patients, acute respiratory failure (severe asthma attack, exacerbated COPD) with 25.4% with a total of 70 cases and Acute Myocardial Infarction with 45.7% of a total of 126 cases. HE recorded diagnoses very various as he syndrome post CPR in he 28.75%. He diagnosis of income of the patients with survival immediate post CPR were: shock continued of encephalopathy multifactorial and insufficiency respiratory; while that of the survivors at discharge was respiratory failure.



Graphic 1: Evolution neurological of the patients subjected to procedures of CPR

Note: It should be noted that to evaluate this parameter we will use the 86 patients in the which the procedures of CPR were effective , regardless of its subsequent evolution Of the 86 patients studied, a predominance of 30 patients was found for an evolution neurological regular, representing 35% of the case studies, followed by patients with poor neurological evolution with 29 cases, representing 34% of the cases.

An easy-to-use parameter, the Glasgow Coma Scale (GCS), has been taken as a basis. From a neurological point of view, it is observed that patients who responded to the CPR and survived to the 24 hours he 29.0 % had a Glasgow of 3 I mean with a evolution neurological regular ; he 35.5 % had a worth of 4-8, and is greater than 8 in 14%. In the first group, only one survivor was found with an improvement of state neurological until arrive to a Glasgow of 8, surviving with great functional limitation. In the second group, one third managed to graduate, and two of them progressively improved their Glasgow Scale until it exceeded the value of 8.

He last cluster had a survival of 35 %, remaining with a Glasgow greater than 8 upon discharge, in-hospital complications were overcome, 3 of them with independence and acceptable quality of life.

Messaney and collaborators have stated, who explain that no component of the Glasgow Scale in particular is shown to be a better predictor for the survival and subsequent neurological evolution of these patients.[35]

Year	CPR performed	No. Of patients Graduates alive	%	deceased
2007	29	6	24.1	4
2008	28	7	26.3	4
2009	25	7	31.4	4
2010	21	7	36.5	4
2011	18	6	30,0	4
2012	23	6	30,3	3

2013	31	9	30,7	5
2014	27	11	44,4	6
2015	20	8	40,5	4
2016	32	13	41,0	6
2017	22	6	28,1	3
Total	276	86	31	46(53%)

Board 4: Distribution of the patients according to index of survival hospitable

The board showed that of a total of 276 patients to the that you were applied Cardiopulmonary Resuscitation procedures in the period from January 2007 to December 2017, 86 were effective without taking into account post-CPR complications for a 31% effectiveness and of them 46 patients died before hospital discharge, representing a 46 %. The year of better behavior of the indicator was 2014 with a total of 27 patients resuscitated and 11 of them discharged alive for a survival rate of the 44.4%. Without embargo he minor index of deceased HE reported in the years 2012 and 2017 respectively.

Survivors at discharge also presented hypertension, followed by DM, and chronic renal failure. terminal (IRCT) and diseases respiratory. Without embargo, the Patients with a history of IRCT had a good baseline condition and a good quality of life prior to the event, their ages have been as follows: one patient minor of 40 years, 2 between 40 and 60 years and 1 between 60 and 80 years, these latest coming of home either of the unit of hemodialysis of the Nephrocento of Florida, it which in some way favors their adequate response to resuscitation maneuvers in the ICU.

Between the survivors to the high, the insufficiency respiratory acute HE presented with 45.5 %, continued of insufficiency renal chronicle terminal unbalanced, shock and encephalopathy with 18.2% each.

In the first hour HE found a survival of 67.5%, to the 6 hours of 48.75 % and 24-hour survival was 38.75%. Survival to hospital discharge was 13.75% of the total. patients. Of the 20 patients who survive beyond 72 hours, only 11 survive to discharge (55%).

After 24 hours, 31 patients survived, 11 of them with a Glasgow Coma Scale value greater than 8. These patients have a longer survival to hospital discharge (54.5%).

These criteria seem to coincide with what other authors have suggested, who indicate that survival improved in patients with ICC, while that others authors They found the Chronic obstructive pulmonary disease (COPD) as a good prognostic factor for survival post resuscitation cardiopulmonary, based in he made of that he state of adaptation to hypoxia and hypercapnea , allowing it to respond better to resuscitation and to the medium vital advanced, element that was left referred previously. [36]

Conclusions:

-The incidence of survival immediate post-cardiopulmonary resuscitation life expectancy is poor and even more so at discharge.

-Older adults are the group most affected by cardiorespiratory arrest and concurrent pathological history is an important determinant in the presentation of these events and survival.

-The scale of coma of Glasgow has a worth predictive favorable of survival; over 8, and lower morbidity and mortality.

Exhibit 1

Model of consent informed

I, exercising my duty, power of choice and my will, hereby give my consent to be included as a subject of research on Resuscitation procedures. Cardiopulmonary in he Hospital Municipal of Florida. He present document of consent approved, delivered by he student of Medicine, previous oral assistance, is part of support of the investigation and has been approved by the Commission of Corresponding ethics, it receipt before of be subjected to the interview medical related to research.

The opportunity is provided to consult with the family and ask all kinds of questions, being satisfied with the answers.

Patients who are mentally incapacitated or unfit for research may be provided with the option of being tutored by a family member in charge.

For all the reasons stated above, I give my written consent to participate in this research.

Signature of the participant in the research: Signature of the sponsoring researcher:

Exhibit 2

Form of harvest of the data

Hospital Municipal University “Manuel Piti Fajardo”

"BEHAVIOR OF THE PROCEDURES OF CPR IN THE UCIEM OF FLORIDA"

Medical record:

1.Age:

2.Sex: Female Male

3.Background pathological personal

_Diabetes Mellitus

_Heart disease Ischemic

_Hypertension Arterial

_Insufficiency Renal

_COPD

4.Evolution neurological of the patient then of the CPR

_ Excellent

_Good

_Regular

_Bad

5.Survival Hospitable

_Alive

_Deceased

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