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Occurrences of cardiorespiratory arrest in a mobile emergency care service

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Ocorrências de parada cardiorrespiratória em um serviço de atendimento móvel de urgência
Presencias de paro cardiorrespiratorio en un servicio móvil de atención de urgencias

RESUMO

Objetivo: Investigar as ocorrências de parada cardiorrespiratória em um Serviço de Atendimento Móvel de Urgência em uma cidade brasileira. Métodos: Estudo documental, retrospectivo, com abordagem quantitativa, coletados por meio de registros do sistema de informação da Central de Regulação de Urgência e Unidades Móveis do SAMU de São Luís- MA. Resultados: Houve prevalência de 727 ocorrências, destas, 587 (80,75%) eram ocorrências não cardiovasculares e 140 (19,25%) cardiovasculares. Os procedimentos mais frequentes foram a punção de acesso venoso periférico (25,64%), monitorização (12,82%), entubação (12,82%), instalação de suporte de oxigênio (10,25%), prancha longa (5,12%), aspiração, cardioversão/desfibrilação e ventilação por pressão positiva cada um com (2,56%). Conclusão: O conhecimento do perfil da vítima e do atendimento pré-hospitalar na parada cardiorrespiratória possibilita o preparo da equipe para uma melhor assistência.

DESCRITORES: Ambulâncias. Serviços médicos de emergência. Parada cardíaca.

ABSTRACT

Objective: To investigate occurrences of cardiorespiratory arrest in a Mobile Emergency Care Service in a Brazilian city. Methods: Documentary, retrospective study, with a quantitative approach, collected through records of the information system of the Central de Regulação de Urgência and Mobile Units of the SAMU of São Luís-MA. Results: There was a prevalence of 727 events, of which 587 (80.75%) were non-cardiovascular events and 140 (19.25%) were cardiovascular events. The most frequent procedures were puncture of peripheral venous access (25.64%), monitoring (12.82%), intubation (12.82%), installation of oxygen support (10.25%), long board (5 .12%), aspiration, cardioversion/defibrillation and positive pressure ventilation each with (2.56%). Conclusion: Knowledge of the victim's profile and pre-hospital care in cardiac arrest makes it possible to prepare the team for better assistance.

DESCRIPTORS: Ambulance. Emergency medical services. Cardiac arrest.

RESUMEN

Objetivo: Investigar las ocurrencias de paro cardiorrespiratorio en un Servicio Móvil de Atención de Emergencia en una ciudad brasileña. Métodos: Estudio documental, retrospectivo, con abordaje cuantitativo, recolectado a través de registros del sistema de información de la Central de Regulação de Urgência y Unidades Móviles del SAMU de São Luís-MA. Resultados: Hubo una prevalencia de 727 eventos, de los cuales 587 (80,75%) fueron eventos no cardiovasculares y 140 (19,25%) eventos cardiovasculares. Los procedimientos más frecuentes fueron punción de acceso venoso periférico (25,64%), monitorización (12,82%), intubación (12,82%), instalación de soporte de oxígeno (10,25%), tabla larga (5,12%), aspiración, cardioversión/desfibrilación y ventilación con presión positiva cada uno con (2,56%). Conclusión: El conocimiento del perfil de la víctima y de la atención prehospitalaria en paro cardíaco posibilita preparar al equipo para una mejor asistencia.

DESCRIPTORES: Ambulancia. Servicios médicos de emergencia. Paro cardiaco.

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INTRODUÇÃO

Cardiovascular diseases represent the main causes of death in Brazil. There are more than 1100 deaths per day, about 50 per hour, 1 death every 90 seconds. It is estimated that by the end of 2021, almost 400,000 citizens will die from these diseases, which could be avoided or postponed with preventive care and therapeutic measures. Ischemic heart diseases are the main causes of cardiorespiratory arrest (CPA), leading to an impact on mortality in the health system [1].

CPA remains one of the most prevalent cardiovascular emergencies with high morbidity and mortality worldwide. In Brazil, cardiac arrest resulting from a cardiovascular disease or even trauma affects around 200,000 people per year and can occur both in hospitals and at home, requiring a team capable of recognizing and providing emergency care due to the risk of death.

The correlation between comorbidities and CRP is the subject of studies, arterial hypertension, diabetes mellitus, neurological diseases and heart diseases are closely linked to such an emergency [4], with the etiology related, mainly to clinical causes originated by secondary diseases and traumas [5].

Decree No. 5055, of April 27, 2004, establishes the Mobile Emergency Care Service (SAMU) in municipalities and regions of the national territory. The SAMU represents an essential component of the Unified Health System (SUS) which, in addition to providing a mobile pre-hospital immediate assistance service, transports patients to hospitals in both the public and private networks and is composed of regulation and ambulance teams, composed of doctors and nurses [6].

Knowledge of the profile of CRA victims provides better preparation of the team involved in care, since training, skills and updates in CRA are essential. Failure to follow guidelines, protocols, training and updates makes care inappropriate, not systematized and disorganized, causing turmoil and reducing the chances of survival [7].

In Brazil, there is little research on assessments of the pre-hospital component, which, possibly, can be explained by the recent creation of a public policy for emergency care [4].

Data in the Brazilian literature regarding the incidence of CRA are still scarce, with the impact of CRP on the mortality of victims being observed [8]. Furthermore, the need for adequate and urgent intervention strategies for CRA victims who are not in a hospital environment is indisputable, requiring immediate and quality care for their survival. From this perspective, the following research question was chosen: How is care given to victims of

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cardiac arrest at SAMU in São Luís, Maranhão?

Therefore, the study aimed to investigate the occurrences of cardiorespiratory arrest in a Mobile Emergency Care Service in a city in northeastern Brazil to identify the socio-demographic and clinical data of the victims assisted in cardiorespiratory arrest and to characterize the care provided to victims of cardiorespiratory arrest.

METHOD

Retrospective study, quantitative approach, matrix research subproject: "Health problems treated by the Mobile Emergency Care Service" in São Luís, Maranhão (MA). Data from a secondary source were used, collected through records of the information system of the Central de Regulação de Urgência and Mobile Units of the SAMU of São Luís-MA.

The population was constituted by the attendance records of victims of injuries assisted by SAMU-São Luís-MA. All records of consultations carried out between the months of January and February of 2018 were analyzed, making a total of 727 records. Of these, 140 records corresponded to cardiovascular care, including only those who evolved with CRA. The sample consisted of 39 attendance sheets corresponding to CRA victims. The records of other clinical, traumatic and cardiovascular treatments that did not show the CRA event were excluded.

The survey data collection was based on access to the matrix project database and carried out from September 2021 to January 2022. Data were collected through records on the Individual Medical Regulation Form, consisting of 50 items divided into: Call, Help, Client/Victim, Incident, Transport used, Presumed severity, Assessment at the place of occurrence, Risk classification, Secondary assessment, other injuries, Procedures performed, Therapy instituted, Term of refusal,

Support requested, Final remarks, Destination of the patient.

The data were ordered in a spreadsheet in the Microsoft Office Excel 2013 program, the variables were coded in Arabic numbers and typing was performed. The descriptive analysis was performed by calculating the simple absolute and simple relative frequencies and presented in the form of tables and graphs.

The research was submitted and approved by the Research Ethics Committee of the Federal University of Maranhão (CEP-HUUFMA), under opinion number 3.354.698 All recommendations of Resolution No. 466/12 of the National Health Council were complied with [9].

RESULTS:

It was observed that of the total 727 events, 587 (80.75%) corresponded to non-cardiovascular events and 140 (19.25%) to cardiovascular events.

Table 1 refers to the distribution of other cardiovascular occurrences, except CPA, performed by SAMU-192 São Luís. Other cardiovascular occurrences included systemic arterial hypertension 87 (86.14%), unspecified heart diseases 9 (8.91%), tachycardia 2 (1.98%) and acute myocardial infarction, congestive heart failure and stroke. brain, each with 1 (0.99%).

Table 2 refers to the clinical conditions of the CRA victims (N=39). It is observed that victims of cardiorespiratory arrest mostly had cardiovascular disease 10 (25.64%) (Table7).

Table 3 refers to the drug therapy used when assisting victims and CRA. The registration of the following drugs is observed: adrenaline 6 (15.38%) saline solution 3 (7.69%), glucose 3 (7.69%), diazepam 2 (5.12%), sodium bicarbonate 2 (5.12%) and captopril2 and ringer lactate, both with 1 (2.56%).

Graph 1 shows the outcome of care for CRA victims. It is noted that 23

Table 1: Other cardiovascular occurrences assisted by SAMU-192. São Luís, Maranhão, Brazil, 2018

Other cardiovascular events	N - %
Systemic Arterial Hypertension (SAH)	87 - 86,14
Unspecified heart disease	09 - 8,91
Tachycardia	02 - 1,98
Acute Myocardial Infarction (AMI)	01 - 0,99
Congestive heart failure (CHF)	01 - 0,99
Brain stroke	01 - 0,99
Total	101 - 100,00

Source: SAMU, 2018.

Table 2: Clinical conditions of victims of cardiac arrest. São Luís, Maranhão, Brazil, 2018

Clinical condition	n (%)
Respiratory	01 (2,56)
Neurological	02 (5,12)
Metabolic	01 (2,56)
Cardiovascular	10 (25,64)
Others	01 (2,56)
No registered clinical conditions	24 (61,53)
Total	39 (100,00)

Source: SAMU, 2018.

(59%) victims died at the place of care and 16 (41%) survived during care,

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DISCUSSION

Cardiovascular diseases are the main causes of death and hospitalizations worldwide. In 2016, there were approximately 17.9 million deaths from such conditions. Systemic Arterial Hypertension (SAH) is part of cardiovascular diseases and has gained prominence as one of the most prevalent conditions in public health worldwide and, consequently, in Brazil [10-11]. SAH is one of the public health problems that causes great social and economic impact and has been correlated with sudden death due to CRA in out-of-hospital care, especially in individuals who have difficulty controlling blood pressure [12-13].

A study finds that the most prevalent comorbidities among the CRA victim population are cardiovascular diseases (25.09%)14. It is known that analyzing comorbidities in CA, based on records, is very complex, considering that the cause of CRA permeates many factors that can be underestimated, underreported and even underdiagnosed, however, heart diseases are closely linked to such an emergency [12].

The installation of peripheral venous access is characterized as the first option in emergencies, as it is the easiest to perform, both by professionals and by the materials available, this procedure is common in care for victims of CRA [4]. In the situation of CRA, the administration of adrenaline is one of the most prevalent. Adrenaline is part of the category of drugs called vasopressors, their use in CRA aims to increase coronary perfusion [3]. This action occurs due to vasoconstriction that increases the return of spontaneous circulation through stimulation of α receptors present in vascular smooth muscle, with improvement in diastolic blood pressure [15-16].

The main outcome of CRA victims is death even after BLS intervention, according to studies by Brandão et al., (2020) [5] and Paula et al., (2021) [14] showed death rates of 84.5 % and 30.4% respectively.

The percentage of deaths that occur in victims of out-of-hospital CRA emphasizes the need for training of professionals and teams that work in urgent and emergency mobile services. Another fundamental point is that the training of the layperson for early recognition of CRP reduces the chances of death [17].

It is important to highlight the relevance of filling out pre-hospital care forms properly and completely, which is one of the greatest difficulties found by researchers who seek to assess this topic.. Such information is essential for research and for improving care[18].

CONCLUSION

Knowledge of the victim's profile and pre-hospital care in cardiac arrest makes it possible to prepare the team for better assistance. I reiterate that SAMU plays an important role in caring for victims of cardiovascular diseases, but there are challenges in terms of 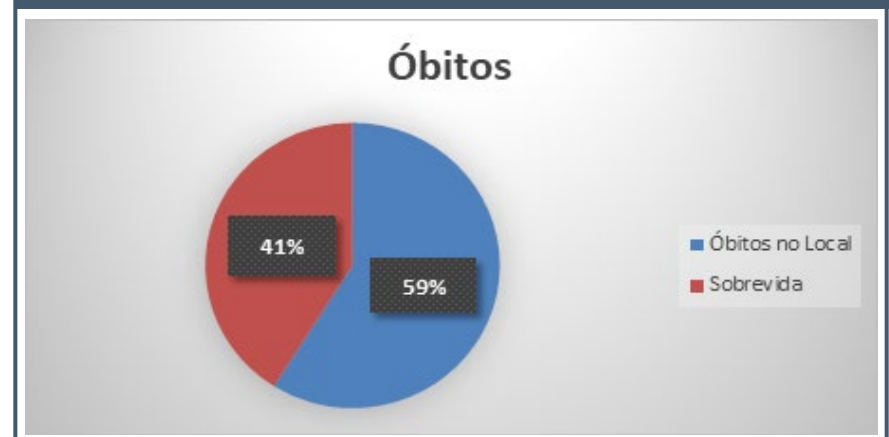comprehensiveness of attention. As limitations of the study, the lack of filling in some information in the service form stands out.

Table 3: Drug therapy used at the time of care for CRA victims. São Luís, Maranhão, Brazil, 2018

Therapy	n (%)
Adrenaline	06 (15,38)
Saline	03 (7,69)
Glucose serum	03 (7,69)
Diazepam	02 (5,12)
Sodium bicarbonate:	02 (5,12)
Captopril	01 (2,56)
Ringer lactate	01 (2,56)
Total cases with drug therapy instituted.	18 (46,15)
Not registered in the service sheet	03 (7,69)
Total	39 (100,00)

Source: SAMU, 2018.

Graph 4: Outcome of assistance to victims of cardiorespiratory arrest. SAMU-192 São Luís, Maranhão, Brazil, 2018

Source: SAMU, 2018.

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