FACTORS ASSOCIATED WITH MORTALITY OF PATIENTS WITH ACUTE CORONARY SYNDROME FROM PREHOSPITAL CARE IN THE EMERGENCY MEDICAL DEPARTMENT

Lucas Crespo de Barros[1], Simone Karla Apolonio Duarte[2], Julianna Vaillant Louzada Oliveira[3], Hudson Pereira Pinto[4], Leonardo França Vieira[5], Roberto Ramos Barbosa[6], Caio Duarte Neto[7] and Luciana Carrupt Machado Sogame[8]

ABSTRACT

Introduction: Cardiovascular diseases are the leading causes of morbidity and mortality worldwide. One of the ways to access the hospital can be mobile pre-hospital care. The objective of this study was to verify the risk factors for the development of death in patients with acute coronary syndrome who came from mobile prehospital care and were referred to an emergency medical service at a Hospital and University Center in Brazil. **Methods:** This is a prospective cohort study of patients admitted to the emergency medical service in 2021 with acute coronary syndrome from mobile prehospital care. Sociodemographic and care information was collected from mobile pre-hospital care. During hospitalization, clinical characteristics of admission and care were collected. The association between qualitative variables was performed using the chi-square test or Fisher's Exact test. Regarding the numerical variables, normality was verified using the Kolmogorov-Smirnov test followed by the non-parametric Mann-Whitney test. **Results:** The incidence of death was found in 8.4% of the 84 participants included. Most of the victims were: male (66.7%), elderly (60.7%),

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[1] Cardiologist at Hospital Santa Casa de Misericórdia de Vitória, Espírito Santo, Brazil.
Professor at the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
Master's degree in Public Policy and Local Development from the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
E-mail: lucas.barros@emescam.br
[2] Professor at the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
Master's degree in Public Policy and Local Development from the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil
[3] Professor at the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
Master's degree in Public Policy and Local Development from the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
Emergency Physician from Vitória, Espírito Santo, Brazil
[4] Professor at the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
[5] Master's degree in Public Policy and Local Development from the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
[6] Cardiologist at Hospital Santa Casa de Misericórdia de Vitória, Espírito Santo, Brazil.
Professor at the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
[7] Professor at the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
Master's degree in Public Policy and Local Development from the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
Emergency Physician in Vitória, Espírito Santo, Brazil
[8] Professor at the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
Master's degree in Public Policy and Local Development from the School of Sciences of Santa Casa de Misericórdia de Vitória, Vitória, Espírito Santo, Brazil.
PhD in Sciences, Federal University of São Paulo, São Paulo, São Paulo, Brazil

brown (88.1%), treated in the afternoon (38.1%), with presumed critical severity (92.9%), an advanced health unit was sent (94%) and the origin of the call that resulted in death was outside the home (78.6%). Regarding the clinical characteristics of hospital admission, most presented: typical chest pain (86.9%), risk factor for cardiovascular disease present (85.7%), the most common clinical diagnosis was ST-segment elevation infarction (60.7%), and alert (83.3%). Regarding hospital care, most received oxygen supplementation (84.5%), were admitted to the emergency room (81%), underwent percutaneous coronary intervention (67.9%) and echocardiogram (79.8%). The following were risk factors for death (p<0.05): atypical pain, clinical diagnosis of post-cardiorespiratory arrest, level of consciousness on the ADL scale, presence of pain or unconsciousness, received oxygen supplementation, clinical treatment, absence of echocardiogram, left ventricular ejection fraction, oxygen saturation, and heart and respiratory rate. **Conclusion:** The incidence of death was 8.4% and clinical and in-hospital care risk factors were found with the occurrence of death, which emphasizes the importance of factors related to death in patients with acute coronary syndrome to optimize clinical outcomes and reduce mortality.

Keywords: Acute Coronary Syndrome. Pre-Hospital Care. Hospital Mortality. Emergency Medical Service.

INTRODUCTION

According to the *Global Burden of Diase* (GBD), a worldwide epidemiological study in 2019, the prevalence of cardiovascular diseases was estimated at 6.1% of the population, having increased since 1990   (1) . These diseases are the main causes of death in Brazil, being responsible for more than 300 thousand deaths per year, and for the increase in morbidity and disability of affected individuals, showing that they are an important public health problem. The main cause of mortality is acute coronary syndrome (2) and   (3)   according to Tavares et al in Brazil, cardiovascular diseases are responsible for approximately 28% of all annual deaths, half of them due to acute coronary syndromes. The BRACE study found that 45.7% of hospital admissions are due to acute coronary syndrome in Brazil and are one of the most frequent types of care in emergency medical services   (4)   (5) .

The clinical manifestation of acute coronary syndrome is extremely variable, with chest pain as the main symptom in about 30-40% of patients.   (3) In the emergency department, chest pain represents up to 10% of the attendances, and it is essential to carry out an efficient evaluation to determine if there are signs of acute ischemia or some other potentially fatal disease. Thus, early diagnosis is necessary through available and evidence-based complementary methods that allow   (5) the reduction of severity and mortality.   (3)

In Brazil, the Unified Health System guarantees access to the Emergency Medical Service through the Urgent and Emergency Care Network, which is regulated by the National Emergency Care Policy (PNAU). The type of care is recommended through the Urgency and Emergency Regulation Centers, grouped in a Care Regulatory Complex, which determine the type and resource for mobile pre-hospital care, in addition to defining the best place, within the care network, to continue the care by referring to the respective reference hospitals according to each health problem.   (6–9)   (6,8–12)

Given this, it is essential to emphasize that acute coronary syndrome is one of the main reasons for emergency services and, if not diagnosed and treated quickly and correctly, it can lead to increased morbidity and disability in Brazil and worldwide. Therefore, the objective of this study is to verify the risk factors associated with the development of death in patients with acute coronary syndrome who came from pre-hospital care by the Mobile Emergency Care System (SAMU) of Espírito Santo (ES) and referred to an emergency medical service of a reference hospital in cardiovascular care.

METHODS

This is a prospective study in patients admitted to the emergency medical service of the Hospital Santa Casa de Misericórdia de Vitória (HSCMV) in Espírito Santo from mobile pre-hospital care by SAMU in ES, from January to December 2021.

The study site is a general hospital, a reference for cardiovascular care in the metropolitan region of Vitória, of a philanthropic and private nature, which aggregates teaching, research and care activities, in which more than 90% of the care is aimed at patients of the unified health system.

Acute coronary syndromes encompass a spectrum of conditions that include patients who have recent symptoms or signs, with or without 12-lead electrocardiogram changes, and with or without acute elevations in cardiac troponin concentrations. (13)

This study included patients who were admitted to the HSCMV, aged over 18 years, both genders, with a diagnosis of acute coronary syndrome, and were treated in the pre-hospital environment by the SAMU of ES. Patients who did not have a confirmed diagnosis of acute coronary syndrome during hospital care, inadequate completion of the variables selected for this study in the Regulation Center, and incomplete data in the medical records of HSCMV patients were excluded.

The following information was collected at the SAMU regulation center in Espírito Santo: life cycle (adult and elderly); sex (male and female); ethnicity (white, brown, black and without information); marital status (with or without a partner and without information); Application period: morning (6:00 am to 11:59 am), afternoon (12:00 pm to 5:59 pm), evening (6:00 pm to 11:59 pm) and early morning (00:00 am to 5:59 am); Weekday: weekday (Monday to Friday) and weekend (Saturday and Sunday); presumed severity (critical and non-critical); type of feature sent: Basic support (USB), Advanced support (USA), and intermediate support (USI); type of care (primary and secondary) and origin of the call for assistance (home or outside the home).

Patients who had absolute priority were considered critical, cases in which there is imminent risk of death and/or severe, immediate or secondary functional loss, while the others were considered non-critical. (14)

On hospital admission, after confirmation of the diagnosis of acute coronary syndrome, the following information was collected: chest pain (typical and atypical), cardiovascular disease risk factor (present and absent) characterized as: systemic arterial hypertension, diabetes mellitus, smoking, alcoholism, drugs, heart failure, dyslipidemia,

positive family history, coronary artery disease, previous coronary event, chronic kidney disease, stroke, valvular heart diseases, arrhythmias and finally the clinical diagnosis (chest pain, unstable angina, acute myocardial infarction with and without elevation, in addition to post-cardiorespiratory arrest).

The characteristics of the hospital management collected were: alert consciousness, voice, pain and unconsciousness (ADL), oxygen supplementation (present and absent), type of treatment (coronary artery bypass grafting, percutaneous coronary intervention and clinical treatment), place of admission (intensive care unit and emergency room), echocardiogram (absent and present), age, weight, left ventricular ejection fraction, heart rate, respiratory rate, systolic blood pressure, diastolic blood pressure, and oxygen saturation.

Regarding the AVDI scale, it is a tool that simplifies neurological assessment, allowing the state of consciousness to be quickly described and early changes identified. The acronym AVDI refers to: A (alertness), V (responds to verbal stimuli), D (responds to painful stimuli) and I (unconscious).   (15)

The primary outcome was patients who died during the hospitalization period.

The data were tabulated in *a Microsoft Excel* spreadsheet version 16.40 and analyzed using *the IBM SPSS Statistics (Statistical Package for the Social Sciences)* version 29. Categorical variables were analyzed using frequencies and percentages. Quantitative variables were used by data summary measures such as mean, standard deviation, median, minimum and maximum. The association between the independent variables (qualitative) and the primary outcome (presence and absence of death) was performed using the chi-square test or Fisher's exact test (in the case of expected values less than 5 and tables in the 2 x 2 matrix format), and, in the case of significant association, residual analysis was performed to verify the categories that contributed to the association (residual values greater than |1.96| contribute positively to the association,   that is, they indicate that there is a higher frequency than should happen and if the categories are independent). The normality of the numerical variables was verified using the Kolmogorov-Smirnov test. Since most of the variables did not have a normal distribution ($p < 0.05$), the comparison was performed using the non-parametric Mann-Whitney test.

In all analyses, a significance level of 5% ($p < 0.05$) was adopted, with a 95% confidence interval (95%CI).

This study is an integral part of the Study: Mobile and Hospital Pre-hospital

Emergency Care of the Health Care Network of the Metropolitan Region of Espírito Santo, developed by the Interdisciplinary Research Center of the Urgency and Emergency Network and was exempt from the Free and Informed Consent Form according to Resolution 466/12. The research project was approved with an opinion under protocol 4.418.985 and authorized by the Espírito Santo State Department of Health (SESA/ES), through the Espírito Santo Institute of Teaching, Research and Innovation in Health (ICEPi).

RESULTS

The initial study population consisted of 142 patients, including 84 with acute coronary syndrome, of whom 7 died, which represents an incidence of 8.4%.

The sociodemographic characteristics of the patients with acute coronary syndrome and the comparison of these characteristics, considering those who died during hospitalization, are shown in Table 1.

Table 1 - Comparison of the demographic characteristics of patients with acute coronary syndrome treated by the regulation of SAMU in ES in the mobile pre-hospital environment, period 2021.

Independent variable	General population	Death		P
		In	Yes	
	84 (100%)	n=77 (100%)	n=7 (100%)	
Life Cycle				**0,6992**
Adult	33 (39,3%)	31 (40,3%)	2 (28,6%)	
Old	51 (60,7%)	46 (59,7%)	5 (71,4%)	
Sex				**1,0002**
Male	56 (66,7%)	51 (66,2%)	5 (71,4%)	
Female	28 (33,3%)	26 (33,8%)	2 (28,6%)	
Ethnicity				**0,9471**
White	8 (9,5%)	7 (9,1%)	1 (14,3%)	
Brown	74 (88,1%)	68 (88,3%)	6 (85,7%)	
Black	1 (1,2%)	1 (1,3%)	0 (0%)	
No information	1 (1,2%)	1 (1,3%)	0 (0%)	
Marital status				**0,4252**
With partner	26 (31%)	25 (32,5%)	1 (14,3%)	
No companion	57 (67,8%)	51 (67,1%)	6 (85,7%)	
No information	1 (1,2%)			
Application period				**0,7211**
Dawn	13 (15,4%)	12 (15,5%)	1 (14,3%)	
Morning	24 (28,6%)	23 (29,9%)	1 (14,3%)	
Evening	32 (38,1%)	28 (36,4%)	4 (57,1%)	
Night	15 (17,9%)	14 (18,2%)	1 (14,3%)	
Period of the week				**1,0002**
Saturday – Sunday	21 (25%)	19 (24,7%)	2 (28,6%)	
Monday – Friday	63 (75%)	58 (75,3%)	5 (71,4%)	
City				**0,0051**

Cariacica	42 (50%)	38 (49,4%)	4 (24,7%)	
Fundão	2 (2,4%)	2 (2,6%)	0 (0%)	
Guarapari	0 (0%)	0 (0%)	0 (0%)	
Saw	8 (9,5%)	6 (7,8%)	2 (28,6%)	
Viana	24 (28,6%)	24 (31,2%)	0 (0,0%)	
Vila Velha	1 (1,2%)	0 (0%)	1 (14.3%)[3]	
Victory	7 (8,3%)	7 (9,1%)	0 (0%)	
Gravity Presumed				**1,000[2]**
Critical	78 (92,9%)	71 (92,2%)	7 (100%)	
Non-critical	6 (7,1%)	6 (8,8%)	0 (0%)	
Resource				**0,785[1]**
USE	79 (94%)	72 (93,5%)	7 (100%)	
USB	2 (2,4%)	2 (2,6%)	0 (0%)	
USI	3 (3,6%)	3 (3,9%)	0 (0%)	
Type of Service				**0,654[2]**
Primary	19 (22,6%)	17 (22,1%)	2 (28,6%)	
Secondary	65 (77,4%)	60 (77,9%)	5 (71,4%)	
Origin of the death call				**1,000[2]**
Domicile	18 (21,4%)	16 (20,8%)	2 (28,6%)	
Outside the home	66 (78,6%)	61 (79,2%)	5 (71,4%)	

Source: Prepared by the authors.

[1] = Pearson's chi-square.
[2] = Fisher's exact.
[3] = Residue of x2.
USA = Advanced Health Unit
USB = basic health drive
USI = intermediate health unit

Regarding the demographic profile of the population, the vast majority of patients with acute coronary syndrome in mobile prehospital care were elderly, male, brown, divorced/single or widowed, afternoon request period, week from Monday to Friday, from the city of Cariacica, presumed critical severity, the type of resource sent was advanced health unit, type of secondary care, origin of the call that resulted in death outside the home (Table 1).

Table 1 also shows that the only variable collected during the regulation process that behaved as a risk factor for death was the city of origin of the call.

Table 2 shows the clinical characteristics of admission and care for patients with acute coronary syndrome at the referral hospital for cardiovascular care.

Table 2 shows the clinical characteristics of admission and care for patients with acute coronary syndrome at HSCMV.

Table 2 - Comparison of the clinical characteristics of admission and care of patients with acute coronary syndrome admitted to HSCMV, 2021.

Independent variable	General population	Death		P
		In	Yes	
	84 (100%)	77 (91,6%)	7 (8,4%)	
Chest pain				**0,0442**
Atypical	11 (13,1%)	8 (10,4%)	3 (42.9%)[3]	
Typical	73 (86,9%)	69 (89.6%)[3]	4 (57,1%)	
DC risk factor				**1,0002**
Absent	8 (9,5%)	8 (11%)	0 (14,3%)	
Present	72 (85,7%)	65 (89%)	7 (100%)	
Not informed	4 (4,8%)			
Clinical diagnosis				**< 0.0011**
Unstable angina	1 (1,2%)	1 (1,3%)	0 (0%)	
Chest pain	5 (6%)	5 (6,5%)	0 (0%)	
IAM with supra	51 (60,7%)	47 (61%)	4 (57,1%)	
IAM without supra	25 (29,8%)	24 (31,2%)	1 (14,3%)	
PCR Powders	2 (2,4%)	0 (0%)	2 (28.6%)[3]	
Level of consciousness				**< 0.0011**
Alert	70 (83,3%)	67 (87%)[3]	3 (42,9%)	
Verbal	1 (1,2%)	1 (1,3%)	0 (0%)	
Pain	1 (1,2%)	0 (0%)	1 (14.3%)[3]	
Unconscious	3 (3,6%)	1 (1,3%)	2 (28.6%)[3]	
No information	9 (10,7%)	8 (10,4%)	1 (14,3%)	
Oxygen Supplementation				**0,0102**
Absent	71 (84,5%)	68 (88.3%)[3]	3 (42,9%)	
Present	13 (15,5%)	9 (11,7%)	4 (57.1%)[3]	
Type of intervention				**0,0321**
CRM	10 (11,9%)	9 (11,7%)	1 (14,3%)	
ICP	57 (67,9%)	55 (71.4%)[3]	2 (28,6%)	
Medical treatment	17 (20,2%)	13 (16,9%)	4 (57.1%)[3]	
Place of hospitalization				**1,0002**
Emergency room	68 (81%)	62 (80,5%)	6 (85,7%)	
ICU	16 (19%)	15 (19,5%)	1 (14,3%)	
Echocardiogram at admission				**0,0032**
Absent	17 (20,2%)	12 (15,6%)	5 (71.4%)[3]	
Present	67 (79,8%)	65 (84.4%)[3]	2 (28,6%)	

Source: Prepared by the authors.

1 = Pearson's chi-square.
2 = Fisher's exact.
3 = Residue of x2.
AMI = acute myocardial infarction.
CRA = cardiorespiratory arrest.
ICU = intensive care unit.
CD = cardiovascular disease.
ADL = verbal alertness, pain, unconsciousness.
CABG = coronary artery bypass grafting.
PCI = percutaneous coronary intervention.

When considering the victims of acute coronary syndrome admitted to HSCMV, most had the following characteristics: typical chest pain, risk factor for cardiovascular disease, and the most common clinical diagnosis was ST-segment elevation infarction, and about the level of consciousness, the AVDI alert scale (Table 2). When taking into account the characteristics of care for victims of acute coronary syndrome, most obtained oxygen supplementation, were referred for percutaneous coronary intervention (PCI), were admitted to the emergency room and underwent echocardiography (Table 2).

Table 2 shows that the variables collected during the process of admission and care at HSCMV, which behaved as a risk factor for death were: atypical pain, clinical diagnosis after cardiorespiratory arrest, presence of pain or unconscious on the ADL scale, oxygen supplementation, clinical treatment and absence of echocardiography during hospitalization.

Table 3 shows the quantitative variables collected in the HSCMV, such as: age, weight, left ventricular ejection fraction (LVEF), heart rate, respiratory rate, systolic blood pressure, diastolic blood pressure, and oxygen saturation.

Table 3 – Comparison of quantitative variables of patients with acute coronary syndrome hospitalized at HSCMV, 2021.

Numerical variable	Denouement	Average	Standard deviation	Median	Minimum	Maximum	P
Acts	Discharged	63	12	62	34	94	0,8891
	Death	68,6	13,8	72	43	83	
Weight in Kg	Discharged	76,4	10,7	75	55,4	106,2	0,5161
	Death	60,8	15,3	60,8	50	71,6	
LVEF in %	Discharged	50,5	13,4	49,5	25	72	0,0331
	Death	27,5	3,5	27,5	25	30	
HR bpm	Discharged	80	20	78	45	140	<0.0011
	Death	94	30	100	50	130	
FR irpm	Discharged	19	3	18	14	28	<0.0011
	Death	18	4	18	15	20	
SBP mmHg	Discharged	134	25	130	82	200	0,3691
	Death	104	23	100	60	126	
DBP mmHg	Discharged	83	15	80	55	116	0,2051
	Death	62	13	60	40	75	
O² Saturation	Discharged	97	2	98	90	100	<0.0011
	Death	95	5	97	86	100	

Source: Prepared by the authors.

1 = Mann-Whitney.
LVEF = left ventricular ejection fraction
Kg= kg
HR= heart rate
bpm= beats per minute
RR= respiratory rate
RPMR= respiratory incursions per minute
SBP = systolic blood pressure

mmHg= millimeters of mercury
o² = oxygen
mg= milligram
dL= deciliter

Table 3 shows that variables such as age, weight, and blood pressure levels did not behave as risk factors, in addition, those who died had a mean left ventricular ejection fraction (LVEF) of 27.5% (+ or -12 standard deviation), heart rate of 94 bpm, respiratory rate of 18 bpm, and oxygen saturation of 95%.

DISCUSSION

In this study, we identified 84 patients and a mortality rate of 8.4% was observed in patients with acute coronary syndrome (ACS) who came from prehospital care and were referred to an emergency medical service that is a reference in cardiovascular disease care. The following factors were identified as associated with an increase in the risk of death: atypical chest pain, occurrence of clinical diagnosis after cardiorespiratory arrest, presence of pain or unconsciousness in the evaluation by the ADL scale, administration of oxygen supplementation, type of intervention performed with a focus on clinical treatment, absence of echocardiography during hospitalization, mean LVEF of 27.5% (+or -12 standard deviation), heart rate of 94 bpm, respiratory rate of 18 bpm, and oxygen saturation of 95%.

Hospital mortality was 8.4% in patients and was higher than the average observed in Brazil, which ranged from 3.4% to 5.5% in studies conducted in public, philanthropic and private hospitals (2). It is important to highlight that there are disparities in patient care in Brazil when comparing public and private hospitals, as in-hospital mortality was found to be 19.5% in public hospitals and 4.8% in private hospitals (2.16). Possibly the differences in mortality are because the patients in the present study had access to hospital care through mobile prehospital care with prehospital care measures, whereas in the other studies the target population was composed of patients admitted to the emergency department or coronary unit with a suspected diagnosis of acute coronary syndrome.

Another aspect that deserves to be mentioned is that part of the data collection was carried out during the Coronavirus pandemic and there was a generalized fear in the population that was not directly affected by the Coronavirus, a portion that avoided seeking medical assistance. This fear may have resulted in a worsening of cases that, in other circumstances, could have been treated earlier.

Mortality from ACS can be reduced with early diagnosis (3) and speed of care is vital, reflecting the effectiveness and quality of both the prehospital and in-hospital systems (13). Prehospital care plays a crucial role in the initial stratification of these patients, focusing on the use of electrocardiogram and the selection of the referral hospital (13).

In this study, at the time of admission, approximately 13.1% of the patients presented symptoms of atypical pain, which proved to be a significant risk factor for mortality, reaching an incidence of 42.9%. Suspected cases of acute coronary syndrome may manifest a wide variety of symptoms or even no symptoms at all, often associated with electrical and hemodynamic instability. These manifestations should be valued in patients with multiple risk factors for coronary artery disease, as well as in subgroups such as women and the elderly who have a higher burden of comorbidities, physiological changes related to age and sex, and frequently use multiple drugs, thus increasing the risk of drug interactions and side effects. In addition, they are more likely to manifest atypical or equivalent symptoms, exhibit more discrete electrocardiographic alterations, and have more extensive coronary disease (3,17).

In this study, the application of the AVDI scale showed that the majority of patients, 87% of the total, were classified as "alert". Initially, this category was not considered a significant risk factor for mortality. However, when analyzing the patients who did not survive, a different trend was observed. In one case (14.3%), the presence of pain was associated with the fatal outcome, while in two cases (28.6%), the patients were unconscious. These conditions proved to be statistically significant as risk factors for death.

There was a significant increase in the risk of death in patients who received oxygen supplementation administration. These results emphasize the importance of carefully evaluating the need for and dosage of oxygen supplementation due to the higher critical potential. The administration of oxygen therapy in patients with SaO2 ≥ 90% and without respiratory distress did not result in a reduction in mortality in other studies (5). Excessive and prolonged oxygen administration can cause systemic vasoconstriction, which can be harmful and aggravate the reduction in coronary blood flow already present in patients with acute coronary syndrome (3).

Regarding the procedure performed, percutaneous coronary intervention was performed in 71.4% of the patients and had a significant protective effect. However, it is important to highlight that 57.1% of the patients who died were under clinical treatment, with a longer time of disease evolution, which proved to be a significant risk factor for

mortality. The decision on the type of intervention to be performed depends on the clinical context, initial electrocardiogram evaluation and hemodynamic stability of the patients(13). Those with non-ST-segment elevation ACS are stratified according to the presence of high-risk characteristics, with a recommendation for invasive stratification at admission, which can be early or immediate (13). On the other hand, acute coronary syndrome with ST-segment elevation requires referral to reperfusion therapies (13).

Death was also a risk factor for not having an echocardiogram, as well as a notable association between hospital discharge and echocardiography during hospitalization. Of the patients analyzed, 84.4% received evaluation by echocardiogram, which proved to be a relevant protective factor. Echocardiography plays a fundamental role in the management of these cases, helping in the diagnosis, localization and extent of the involvement, in the detection of mechanical complications of infarction, and in the provision of important prognostic information (18). Although echocardiography is not routinely performed for the diagnosis of myocardial infarction, it can be useful when the diagnosis is uncertain (19). LVEF is an independent prognostic indicator, being one of the most robust predictors of long-term survival; In addition, it plays a crucial role in guiding drug therapy (18).

The main limitation of this study is the data collection carried out during the period of the COVID-19 pandemic and the number of patients. However, it is important to emphasize that, despite the abundance of studies in the literature on deaths in acute coronary syndrome, few of them address the follow-up of care from the pre-hospital to the hospital. Therefore, the importance of research that fills this gap in care is emphasized to promote improvements in care.

It is also appropriate to discuss that some of the results obtained are due to the nature and particularities of the service provided by the Hospital studied, as presented below. The proportion of patients with ST-segment elevation acute myocardial infarction (STEMI) varies among observational studies, but has decreased by almost 50% in the last decade, from 47.0% to 22.9% in European countries and the United States (20).

In the present study, some selection biases were found, as we had a profile of more severe patients due to the hospital in question being a referral hospital in a region. The Emergency Medical Regulation Center organizes all emergency doors, and the Mobile Emergency Care System is responsible for regulation, being the main gateway for acute myocardial infarction, with ST-segment elevation and critical patients, while the other patients are directed to the Emergency Hospitalization Regulation Center. Consequently,

the vast majority of the 78 victims (92.9%) were critical cases. In addition, as the research hospital is a reference in cardiovascular care for 7 municipalities in the metropolitan region of Vitória, these factors may have contributed to the increase the proportion of STEMI to 51 patients (60.7%) in the study when compared to other places in Brazil and the world.

A confounding factor was that the majority of patients, 68 (81%), were admitted to the emergency department rather than to the intensive care unit (16 patients - 19%). This highlights the inability of the Urgency and Emergency Network of the State of Espírito Santo to balance the demand and supply of services for critical patients, since these patients should remain in the intensive care unit.

Another potential confounding factor was the absence of echocardiograms in patients who died. Due to the severity of the cases, most critically ill patients may not have had enough time to perform this test. The extreme urgency and critical condition of the patients admitted to the referral unit may have limited the possibility of performing the echocardiogram before death.

CONCLUSION

Cardiovascular diseases (CVDs) persist as the cause of about one third of deaths in Brazil and worldwide, disproportionately affecting vulnerable groups with difficulties in accessing quality health services.

It is important to emphasize that there is an increase in the demand for urgent and emergency care, due to demographic and epidemiological changes and the growth of accidents and violence, which has required the restructuring of health systems in several countries.

Acute coronary syndrome is one of the main causes of emergency room care. If not diagnosed and treated quickly and appropriately, it can result in increased morbidity and disability for affected individuals, becoming a major public health problem on a global scale. Therefore, it is crucial to implement more effective interventions to protect, promote and care for the health of populations, with coordinated actions between different sectors, aiming to address and, consequently, reduce morbidity and mortality related to acute coronary syndrome.

In the present study, the incidence of death was significant, and the risk factors associated with the development of death in patients with acute coronary syndrome who came from prehospital care at the mobile emergency care service of Espírito Santo and

referred to an emergency medical service of a reference hospital in cardiovascular care were: atypical chest pain, occurrence of clinical diagnosis after cardiorespiratory arrest, presence of pain or unconsciousness in the evaluation by the ADL scale, administration of oxygen supplementation, type of intervention performed with a focus on clinical treatment, absence of echocardiography during hospitalization, LVEF, heart rate, respiratory rate, and oxygen saturation.

These results emphasize the importance of careful selection of the therapeutic approach in patients with acute coronary syndrome, considering individual factors and clinical characteristics, with the aim of optimizing clinical outcomes and reducing mortality.

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