



PROFILE OF PATIENTS WITH HYPERTENSIVE CRISIS SEEN IN AN EMERGENCY CARE UNIT

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ABSTRACT

Objective: to describe the profile of patients with hypertensive crisis treated at an Emergency Care Unit. **Method:** descriptive cross-sectional study carried out through the analysis of 80 medical records of patients with hypertensive crisis, treated at an emergency care unit, between March 2018 and February 2019. Data were collected using a structured script and were subjected to descriptive statistical treatment. **Results:** after analyzing the 80 medical records, it was found that the mean age of the treated patients was 58.03, with the adult age group being the most prevalent (53.8%). It was found that the mean systolic blood pressure was significantly higher in men than in women ($p=0.013$). As for symptoms, headache was the most prevalent, with 35.0%. It was found that during the treatment of the hypertensive crisis, most patients used only one drug to reduce BP, with centrally acting antiadrenergic drugs being the most cited. Regarding the outcome, most of the patients were discharged (93.8%) soon after treatment; however, 6.3% remained in short-term hospitalization until their condition stabilized. **Final considerations:** this study made it possible to characterize the population with hypertensive crisis treated in an emergency room, showing a possible fragility in the articulation between health care levels.

Keywords: Hypertension. Emergency. Hypertensive crisis. Nursing.

INTRODUCTION

Systemic Arterial Hypertension (SAH) has an important prevalence in Brazil, with data around 32.5% for the adult population⁽¹⁾. However, these data are more prevalent in the elderly⁽¹⁻²⁾. Cardiovascular diseases are responsible for about 17 million deaths every year and complications resulting from arterial hypertension result in 9.4 million of these deaths, according to data from the World Health Organization (WHO), with the hypertensive crisis being one of the main causes that lead to people to seek emergency services⁽³⁾.

According to the Brazilian Guidelines on Arterial Hypertension, a hypertensive crisis is characterized by a sudden increase in blood pressure (BP) usually associated with symptomatic manifestations, and can be divided into hypertensive urgency (HU) and

hypertensive emergency (HE)⁽¹⁾. The most frequent symptoms include headache, dizziness, chest pain, malaise, nausea, epistaxis, among others⁽⁴⁾.

An hypertensive urgency is characterized by an elevation in diastolic blood pressure (DBP) ≥ 120 mmHg linked to symptomatic clinical manifestations but without damage to target organs. On the other hand, a HE occurs when there is an increase in diastolic blood pressure (DBP) ≥ 120 mmHg associated with symptoms indicative of acute and progressive damage to target organs⁽¹⁾.

Target organ injuries trigger complications such as hypertensive encephalopathy, stroke, acute pulmonary edema, myocardial infarction, and others. These injuries can point to imminent risks of death or irreversible organic damage. As a result, many patients are hospitalized and undergo treatment to minimize the risks and

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aggravations of SAH⁽³⁾.

Because it is characterized as urgent/emergency care, the treatment has the main objective of preventing damage to target organs as a result of the progression of the complication, minimizing the risk of consequences to the body and even death. Furthermore, the choice of drug therapy depends on the underlying causes of the crisis, cardiovascular risk and associated comorbidities⁽⁵⁾.

Data indicate that the hypertensive crisis responds for 0.45-0.59% of all hospital emergency cases in the world, and hypertensive emergency cases particularly accounts for 25% of all cases of hypertensive crisis⁽¹⁾.

Retrospective research carried out in an emergency service of a health plan operator in the countryside of São Paulo identified the presence of hypertensive crisis in 2.1% of the assisted cases, mostly in women. In HE, the highest percentages were observed in the age group between 60 and 69 years⁽⁶⁾.

Although approximately 1% of hypertensive patients may have a hypertensive crisis throughout their lives, the prevalence of this condition is still a little known issue in the scientific community⁽⁷⁾.

It is important to highlight the existence of difficulties in the diagnosis and classification of hypertensive crisis and, mainly, regarding the treatment of cases arising from a therapeutic refractoriness⁽⁸⁾. In addition, factors such as age, sex and race can predict the development of these crises, as well as the lack of adherence to the treatment of SAH⁽⁷⁾.

Thus, as it is a frequent event in emergency care units, the clinical understanding of the hypertensive crisis, the frequency and characterization of cases is essential⁽⁸⁾. This is especially important to reduce complications and health problems, because the lack of treatment can lead to higher mortality⁽⁷⁾.

In this context, the guiding question is: what is the profile of patients who are treated with hypertensive crisis in an Emergency Care Unit (ECU) in a municipality in the countryside of the state of Paraná?

Therefore, the objective of the research was to describe the profile of patients with hypertensive crisis treated at an Emergency Care Unit.

METHODS

Descriptive cross-sectional study carried out through the analysis of 80 printed medical records of patients with a hypertensive crisis treated at an Emergency Care Unit (ECU) in Francisco Beltrão, Paraná.

The ECU is a pre-hospital component of intermediate complexity covering eight municipalities in the countryside of the state. Care is allocated to patients in medical urgency and emergency situations and is articulated with Primary Health Care (PHC) and the Mobile Emergency Care Service (SAMU).

Inclusion criteria were all records of cases of patient in hypertensive crisis with DBP $\geq$ 120 mmHg, aged over 18 years, of both sexes, assisted from March 2018 to February 2019, totaling 91 records. Of these, 11 were excluded due to the impossibility of identifying the actions performed during the consultation due to illegibility of the notes.

Data collection took place between the months of July and August 2019 through a script prepared by the researchers based on the literature relevant to the theme. Sociodemographic data such as age, sex and race were collected, as well as data regarding care: measurement of blood pressure (1st measurement), previous treatment for hypertension, antihypertensive drug currently used, signs and symptoms in the emergency department, environment (whether observation or emergency room) and shift of care (day or night), procedures adopted in the emergency care, including drug therapy, electrocardiogram, laboratory and imaging tests (such as x-ray, computed tomography) and outcome. To classify the classes of antihypertensive drugs available for clinical use, the 7th Brazilian Guideline on Arterial Hypertension⁽¹⁾ was used.

The data received statistical treatment using the Statistical Package for the Social Sciences (SPSS) version 25.0. For the descriptive analysis, mean values and standard deviations were used for continuous variables, in addition to absolute and relative frequency values for categorical variables. The difference between the sexes was tested using Student's t test for independent samples, considering the results as

significant with $p < 0.05$.

The research was approved by the Ethics Committee in Research Involving Human Beings (CEPEH) of Paranaense University–UNIPAR under protocol number 3,936,639. Also, all ethical and legal aspects were respected and the Informed Consent Term (ICT) was waived.

RESULTS

After analyzing the 80 medical records, it was found that the mean age of the treated patients was 58.11 ± 14.38 years, with the adult age group being the most prevalent, with 53.8%. Regarding sex, it was observed that just over half (57.5%) of the patients who had a hypertensive crisis were female. In relation to race, white prevailed in most cases, 77.5% (Table 1).

Table 1. Characterization of patients with hypertensive crisis treated at the Emergency Care Unit, Francisco Beltrão, PR, Brazil, 2020.

Variables	n	%
Age (years) - mean $\pm$ SD	58.03	14.3
Sex		
Female	46	57.5
Male	34	42.5
Age		
18-59 years	43	53.8
≥ 60 years	37	46.3
Race		
White	62	77.5
Brown	15	18.8
Black	3	3.8

After analyzing the blood pressure values of the assisted patients, it was found that the mean SBP was significantly higher in men (205.2 ± 16.7) compared to women (194.3 ± 20.5)

($p=0.013$). As for DBP, it was also shown that males had a higher mean (122.3 ± 6.0), but without statistical significance ($p>0.05$) (Table 2).

Table 2 – Data on age and blood pressure of patients with hypertensive crisis, Francisco Beltrão, PR, Brazil, 2020.

Variables	Total sample (n= 80)	Men (n= 34)	Women (n= 46)	P
	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	
Age (years)	58.11 ± 14.38	58.94 ± 14.48	57.50 ± 14.43	0.661
SBP (mmHg)	199.0 ± 19.6	205.2 ± 16.7	194.3 ± 20.5	0.013*
DBP (mmHg)	121.8 ± 5.3	122.3 ± 6.0	121.5 ± 4.6	0.491

*Statistical significance ($p < 0.05$).

As for symptoms, for patients who reported a single symptom, headache was the most prevalent, with 35.0%. However, for those who had two or more symptoms, there was a

predominance of headache and nausea and headache and malaise in 5% of the patients, respectively (Table 3).

Table 3. Distribution of symptoms recorded in the care bulletins of patients with hypertensive crisis, Francisco Beltrão, PR, Brazil, 2020.

Variables	n	%
Only symptom presented		
Headache	28	35.0
Dizziness	14	17.5
Malaise	10	12.5
Vomit	7	8.8
Nausea	2	2.5
Epistaxis	1	1.3
Two or more symptoms presented		
Headache and Nausea	4	5.0
Headache and Malaise	4	5.0
Headache and Dizziness	2	2.5
Dizziness and Malaise	2	2.5
Dizziness and Nausea	2	2.5
Headache, Dizziness and Nausea	2	2.5
Headache and Epistaxis	1	1.3
Headache and vomit	1	1.3

The data presented in Table 4 indicate that 53.8% of the patients were admitted at night. Regarding the environment, the majority (90%) of the patients were treated in the observation room. It was found that, during the treatment of the hypertensive crisis, most patients used only one

drug to reduce BP (70%). Regarding the tests, it was observed that most users underwent ECG (36.3%), only 5% underwent laboratory tests and 3.8% underwent imaging. Regarding the outcome of care, there was a predominance of medical discharge after stabilization (93.8%).

Table 4. Distribution of data regarding patient care at the Emergency Care Unit, Francisco Beltrão, PR, Brazil, 2020.

Variables	n	%
Shift		
Morning	30	37.5
Afternoon	7	8.8
Night	43	53.8
Service environment		
Observation room	72	90.0
Emergency room	8	10.0
Previous drug treatment		
No	42	52.5
Yes	38	47.5
Number of drugs administered		
One	56	70.0
Two	9	11.2
Three	6	7.5
Four	1	1.3
None	8	10.0
Imaging examination		
Yes	3	3.8
No	77	96.3
Laboratory examination		
Yes	4	5.0
No	76	95.0
ECG		
Yes	29	36.3
No	51	63.7
Outcome		
Hospitalization	5	6.3
Discharge	75	93.8

Table 5 shows the distribution of the drug class prescribed according to the presence or absence of previous drug treatment. There was a predominance of monotherapy for both groups. Among patients undergoing previous treatment to reduce blood pressure, centrally acting antiadrenergic drugs were the most prevalent,

being used more frequently by women, elderly, of white color.

Among individuals without previous treatment, drugs of the centrally acting antiadrenergic class also prevailed. They were mostly prescribed for women, adults, of White skin color.

Table 5: Distribution of the drug class prescribed according to the presence or absence of previous drug treatment (n=80)

	Sex		Age		Color	
	Female	Male	Up to 59	60 or more	White	Non-white
With prior drug treatment						
One drug						
Antipsychotic	1	0	0	1	1	0
AI-CA	12	4	5	11	14	2
ACEI	8	4	5	7	7	5
RV	1	1		2	1	1
Two drugs						
ACEI + AI-CA	0	1	1	0	0	1
ACEI + Platelet AA	0	1	1	0	1	0
ACEI + CBB	0	1	1	0	0	1
Three drugs						
AI-CA + ACEI + BZO	0	1	1	0	0	1
ACEI + angio II AT-RB + BZO	0	2		2	2	
Four drugs						
AI-CA + ACEI + AI-Beta + DV	0	1	0	1	1	0
No prior drug treatment						
None						
	5	3	8	0	8	0
One drug						
AI-CA	8	7	10	5	13	2
ACEI	7	2	7	2	9	0
DV	0	1	0	1	1	0
Two drugs						
AI-CA + BZO	1	0	1	0	0	1
ACEI + BZO	2	1	1	2	2	1
ACEI + AI-CA	1	1	0	2	1	1
Three Drugs						
AI-CA + ACEI + BZO	0	3	2	1	1	2

Note: Platelet AA = Platelet antiaggregant; BZO = Benzodiazepine; angio II AT-RB = Angiotensin II AT receptor blocker; CBB = Calcium channel blockers; AI-CA = Adrenergic Inhibitor-Central Action; AI-Alpha= Adrenergic inhibitor - alpha-blockers; AI-Beta= Adrenergic inhibitor - beta-blocker; ACEI= Angiotensin Converting Enzyme Inhibitors; DV= direct vasodilator

DISCUSSION

The profile of the patients studied showed that the mean age was maintained among the adult female population, corroborating a study⁽³⁻⁹⁾ that also sought to assess the profile of users with increased blood pressure levels. According to a study carried out in Maringá (PR), women over 50 years of age are predisposed to develop cardiovascular diseases, often caused by a gradual decrease in hormone production⁽¹⁰⁾.

Regarding race, the white race was the most prevalent among patients. This is similar to the findings of a study carried out in Porto Alegre (RS), which also found a higher frequency of white individuals with hypertensive crisis⁽⁴⁾.

As for the complaints reported by patients, headache was the most constant clinical manifestation. This agrees with a study carried out in São Paulo in 2019 which evaluated the presence of symptoms during the hypertensive crisis⁽³⁾. Headache is directly linked to increased

blood pressure, due to disruption in the cerebral autoregulatory mechanism that leads to vasodilation and increased cerebral blood flow, which could explain the data found⁽¹⁾.

It is noteworthy that patients reported other symptoms in addition to headache during treatment, especially nausea, malaise, dizziness, vomit and epistaxis. These symptoms associated with high blood pressure point to pathophysiological changes that occur in the body, which may suggest other complications, such as hypertensive encephalopathy, stroke and acute myocardial infarction⁽¹¹⁾.

In this study, the previous therapy of the population with AH was analyzed. It was noted that the majority of respondents stated that they did not undergo any treatment. This was different of the finding of a study carried out in two Family Health Strategies (FHS) in 2018, in which 66.2% of patients reported taking drug therapy for SAH⁽¹²⁾. These are worrying data, since severe hypertension is considered a risk factor for cardiovascular disease and the lack of adherence to treatment may be one of the reasons for high mortality rates⁽²⁾.

On the other hand, patients who were on drug treatment declared a predominance of the use of ACE inhibitors, with diuretics being the class with the highest association. It should be noted that, in order to reduce blood pressure levels, the association of different drugs is often necessary. However, the initial choice of antihypertensive drugs is always based on the proven reduction of cardiovascular diseases⁽¹³⁾.

Dosage should be adjusted to achieve a reduction in blood pressure. Generally, to reach the therapeutic goal, the drug dosage can be increased, or the association with an antihypertensive drug from another therapeutic group can be considered. When there is no expected effect at the maximum dosage, it is recommended to replace the antihypertensive drug initially used, to reduce the dosage and to combine it with another antihypertensive drug of a different class, or even another combination, including three or more drugs⁽¹⁾.

When evaluating the mean BP presented by the patients during the treatment, high BP values were observed, proving a picture of an instituted hypertensive crisis. Men had higher BP values compared to women, presuming that the male

population is more susceptible to cardiovascular risk factors, such as work overload, stress, sedentary lifestyle and irregular eating habits⁽¹⁴⁾.

Furthermore, it is evident that the increase in blood pressure levels can be aggravated when associated with obesity, endocrine disorders and dyslipidemias. According to morbidity and mortality indicators, 28.23% of male deaths are due to disorders of the circulatory system⁽¹⁵⁾.

As for the service shift, there was a significant increase in demand during the night period, suggesting that this may be due to the adult insertion in the labor market and the stress accumulated throughout the day. A study carried out in the emergency department of a hospital in 2019 showed similar data⁽⁴⁾. The neuroendocrine stress response promotes the acute release of catecholamines into the bloodstream (adrenaline and noradrenaline) causing an increase in heart rate, and consequently, an increase in BP⁽¹⁶⁾.

With regard to pharmacological prescription during care, centrally acting antiadrenergic drugs were chosen, followed by ACE inhibitors. Among the centrally acting alpha-agonist agents, Clonidine, Methyldopa and Rilmenidine stand out⁽¹⁾. For the second drug of choice, Captopril stands out, as it is the most used drug in these cases, with results achieved approximately 20 minutes after administration, lasting from 4 to 6 hours⁽¹⁷⁾. An association was also observed between ACE inhibitors, benzodiazepines, centrally acting antiadrenergic agents, calcium channel blockers and platelet anti-aggregating agents.

It is important to point out that the treatment of HU must be instituted with the administration of oral antihypertensive drugs, for the gradual reduction of blood pressure levels. On the other hand, during HE, parenteral antihypertensive drugs are used for immediate blood pressure reduction⁽³⁾.

Thus, the treatment instituted by professionals is in accordance with what is recommended by the Guideline for Arterial Hypertension of the State of Paraná⁽¹⁸⁾ concomitantly with the Brazilian Guidelines on Arterial Hypertension⁽¹⁾.

Regarding the additional tests most requested by the medical team, in this study, electrocardiograms stood out, being appropriate in the care protocols and because the increase in blood pressure indicates cardiovascular risk⁽¹⁴⁾.

In the context of care, laboratory tests and chest radiography were also requested, which supported the clinical diagnosis and detection of possible lesions to the target organs, as in a study carried out in the emergency sector of a hospital that showed similar results to the present ones⁽³⁾.

As for the destination of patients after the service, as expected, they were discharged more frequently. Similarly, a study carried out in a ECU in 2018 found that 93.1% of the patients were discharged after care⁽²⁾. However, the low counter-referral frequency demonstrates a failure in the articulation between the levels of care, since patients with high blood pressure levels need a more comprehensive and continuous follow-up by the primary care teams⁽⁶⁾.

This study had limitations with regard to incomplete and inadequate records in the medical records, and the handwriting of some professionals made it difficult to understand the information in many cases, which may have resulted in an underestimated prevalence.

FINAL CONSIDERATIONS

This study revealed the profile of patients with hypertensive crisis treated at an ECU, which was

characterized by female, white skinned and adult patients who sought medical assistance during the night with the main complaint of headache. It was also observed that there is a weakness in the articulation between the levels of care, since the lack of previous treatment, concomitantly with the possible absence of monitoring and stratification of patients by PHC teams can result in high blood pressure levels and health risks in the population, inducing the search for urgent and emergency services.

The findings highlight the importance of an accurate reception and diagnosis in cases of high blood pressure. Using specific guidelines for hypertensive crises and encouraging the adherence of health professionals to their use can enhance efficient care.

This research portrays the problem of hypertensive crisis in emergency services, confirming previous studies in the literature. A comprehensive and effective program is needed in order to identify cases in the local population in a timely manner, promoting periodic verification of blood pressure levels, adherence to treatment and changes in life habits, minimizing later complications and increasing the quality of life.

PERFIL DOS PACIENTES COM CRISE HIPERTENSIVA ATENDIDOS EM UMA UNIDADE DE PRONTO ATENDIMENTO

RESUMO

Objetivo: descrever o perfil dos pacientes com crise hipertensiva atendidos em uma Unidade de Pronto Atendimento. **Método:** estudo transversal descritivo, realizado por meio da análise de 80 prontuários de pacientes com quadro de crise hipertensiva, atendidos em uma unidade de pronto atendimento, entre o período de março de 2018 a fevereiro de 2019. Os dados foram coletados por meio de roteiro estruturado e receberam tratamento estatístico descritivo. **Resultados:** Após a análise dos 80 prontuários, constatou-se que a média de idade entre os pacientes atendidos foi de 58,03, sendo a faixa etária adulta a mais prevalente (53,8%). Constatou-se que a média da pressão arterial sistólica foi significativamente maior em homens em relação às mulheres ($p=0,013$). Quanto à sintomatologia, a cefaleia foi a mais prevalente, com 35,0%. Verificou-se que durante o atendimento da crise hipertensiva, a maioria dos pacientes fez uso de apenas uma droga para redução da PA, sendo o inibidor adrenérgico de ação central o mais citado. Quanto ao desfecho, grande parte dos pacientes recebeu alta (93,8%) logo após o atendimento, porém, 6,3% permaneceram em internamento de curta permanência até a estabilização do quadro. **Considerações finais:** Este estudo possibilitou a caracterização da população com crise hipertensiva atendida em um pronto atendimento, a qual evidencia uma possível fragilidade existente entre a articulação dos níveis de atenção à saúde.

Palavras-chave: Hipertensão. Emergência. Crise hipertensiva. Enfermagem.

PERFIL DE LOS PACIENTES CON CRISIS HIPERTENSIVA ATENDIDOS EN UNA UNIDAD DE PRONTA ATENCIÓN

RESUMEN

Objetivo: describir el perfil de los pacientes con crisis hipertensiva atendidos en una Unidad de Pronta Atención. **Método:** estudio transversal descriptivo, realizado por medio del análisis de 80 registros médicos de pacientes con cuadro de crisis hipertensiva, atendidos en una unidad de pronta atención, entre el período de marzo de

2018 a febrero de 2019. Los datos fueron recogidos por medio de guion estructurado y recibieron tratamiento estadístico descriptivo. **Resultados:** después del análisis de los 80 registros médicos, se constató que el promedio de edad entre los pacientes atendidos fue de 58,03, siendo la franja etaria adulta la más prevalente (53,8%). Se constató que el promedio de la presión arterial sistólica fue significativamente mayor en hombres que en las mujeres ($p=0,013$). En cuanto a la sintomatología, la cefalea fue la más prevalente, con 35,0%. Se verificó que, durante la atención de la crisis hipertensiva, la mayoría de los pacientes hizo uso de solo una droga para reducción de la PA, siendo el inhibidor adrenérgico de acción central el más relatado. Respecto al resultado, gran parte de los pacientes recibió el alta (93,8%) inmediatamente después de la atención, sin embargo, el 6,3% permaneció en internamiento de corta estancia hasta la estabilización del cuadro. **Consideraciones finales:** este estudio posibilitó la caracterización de la población con crisis hipertensiva atendida en una pronta atención, la cual evidencia una posible fragilidad existente entre la articulación de los niveles de atención a la salud.

Palabras clave: Hipertensión. Urgencias. Crisis hipertensiva. Enfermería.

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