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EPIDEMIOLOGICAL ANALYSIS OF CRANIOENCEPHALIC TRAUMA IN AN URGENCY AND EMERGENCY HOSPITAL

ANÁLISE EPIDEMIOLÓGICA DAS INTERNAÇÕES POR TRAUMA CRANIOENCEFÁLICO EM UM HOSPITAL DE URGÊNCIA E EMERGÊNCIA

ANÁLISIS EPIDEMIOLÓGICO DE HOSPITALIZACIONES POR TRAUMATISMO CEREBRAL EN UN HOSPITAL DE URGENCIA Y EMERGENCIA

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ABSTRACT

Objective: to analyze hospitalizations of Cranioencephalic Trauma victims in an urgency and emergency hospital. **Method:** descriptive and exploratory, quantitative approach, with a questionnaire whose data was analyzed in the software Bioestat 5.3. and presented in figures and tables. **Results:** in relation to sex, males were the most predominant; (52.3%) were from Maceió, while 61 (47.6%) were from other cities. The main cause of CET was: 59 (49.0%), due to traffic accident. As for the associated lesions, Face Trauma predominated, with 33 (25.8%) cases. In observing the evaluation of the level of consciousness, it was observed that of the 128 patients who were victims of CET, 49 (38.28%) had mild CET. **Conclusion:** to know the profile of hospitalizations, due to cranioencephalic trauma, allows planning of preventive actions and improvement of care. **Descriptors:** Brain Injuries; External Causes; Epidemiology.

RESUMO

Objetivo: analisar as internações de vítimas de Trauma Cranioencefálico em um hospital de urgência e emergência. **Método:** estudo descritivo e exploratório, de abordagem quantitativa, com um questionário cujo os dados foram analisados no *software* Bioestat 5.3. e apresentados em figura e tabelas. **Resultados:** quanto ao sexo, o masculino foi o mais predominante; quanto à procedência dos pacientes, a maioria, 67 (52,3%), era de Maceió, enquanto que, de outras cidades, 61 (47,6%). A principal causa de TCE foi: 59 (49,0%), por acidente de trânsito. Quanto às lesões associadas, predominou o Trauma de Face, com 33 (25,8%) casos. Na observação da avaliação do nível de consciência, nota-se que, dos 128 pacientes vítimas de TCE, 49 (38,28%) tiveram TCE leve. **Conclusão:** conhecer o perfil das internações, devido ao trauma cranioencefálico, permite que haja planejamento de ações preventivas e para a melhoria do atendimento. **Descritores:** Traumatismos Encefálicos; Causas externas; Epidemiologia.

RESUMEN

Objetivo: analizar las hospitalizaciones de víctimas de Trauma Craneoencefálico en un hospital de urgencias y emergencias. **Método:** estudio descriptivo y exploratorio, enfoque cuantitativo, con un cuestionario de cuyos datos se analizaron en el *software* Bioestat 5.3. y presentados en figura y tablas. **Resultados:** sobre el sexo, el macho era el más frecuente cuanto al origen de los pacientes, la mayoría, 67 (52,3%), fueron de Maceió, en cuanto que en otras ciudades, 61 (47,6%). La principal causa de TCE fueron: 59 (49,0%) por accidente de tránsito. Quanto a las lesiones asociadas, predominó el Trauma de Cara, con 33 (25,8%) de los casos. En la observación de la evaluación del nivel de conciencia, se nota que las víctimas de 128 pacientes víctimas de TCE, que 49 (38,28%) tuvieron TCE leve. **Conclusión:** conocer el perfil de las hospitalizaciones por traumatismo de craneoencefálico, permite que haya planificación de acciones preventivas para la mejora de servicio al cliente. **Descriptores:** Lesiones Cerebrales; Las Causas Externas; Epidemiología.

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INTRODUCTION

The Brain Injury Association (BIA) defines brain injury as non-degenerative or congenital brain injury caused by external physical force. CET is usually caused by a dynamic load or head impact. This loading can result in any combination of compression, expansion, acceleration, deceleration and rotation of the brain within the skull.¹

Such injury can produce a normal state initially, altered or diminished in consciousness, causing deficiencies in cognitive, behavioral, emotional and physical performance.² It may have, as a consequence, anatomical changes of the skull, from laceration of the scalp, bone fractures, and functional impairment of intracranial structures such as meninges, encephalon or important blood vessels, which may result in momentary or permanent brain death or alterations, cognitive and / or functional.⁴

In the United States of America, an estimated 1.7 million cases of CET were reported, of which 52,000 would result in deaths, 275,000 in hospitalizations and 1,365,000 in emergency and Subsequent release.²⁻⁶

The incidence of CET varies among different localities. However, car accidents, physical assaults and falls are among its most frequent causes. According to Brazilian statistics, external causes are among the four most frequent mortality agents in the country and, if deaths from ill-defined causes were excluded, then it would occupy the second or third place.⁵

Over the last ten years, more than one million people have been disabled due to mechanical trauma in Brazil, with traffic accidents being mainly responsible for these rates. Depending on the hospital studied, hospitalization due to mechanical trauma can reach values above 40% .¹¹

According to DATASUS data, in 2013, in Brazil, 151,683 deaths from external causes of the ICD-10 group were registered, covering all age groups. Of these, 48,063 (31.68%) were due to the Northeast region and 43,452, resulting from traffic accidents, thus occupying the second position among the causes of death, losing only to the aggressions. In the age group between 20 and 29 years, with 38,205 deaths from external causes, occupying the first position with regard to the age group.⁷

The increase in the number of hospitalizations of motorcyclists was of such magnitude that it surpassed the weight of the

falls of all the other categories. For this reason, the overall balance for the period was an increase of 46.3% in the number and 22.0% in hospitalization rates. With this, from 1998 to 2012, the evolution of the three categories of greater volume of hospitalizations: pedestrians, whose rates fall 32.8%; motor vehicle occupants, with a 33.4% fall and motorcycle occupants, whose rates increased dramatically - 288.7% .⁸ Hospital admissions for occupants of motorcycles, which in 1998 represented only 17.4%, for 2012, cover more than half of hospitalizations of that year: 55.5%.

Admissions due to motorcycle accidents were those that grew totally unacceptable in the period 1998/2012 (growth of 366.1%), reaching in 2012, representing more than half of the total number of hospitalizations due to traffic accidents registered by SUS.⁹ In view of this, it is noticeable that the advent of new technologies, modern society acquired faster means of locomotion, however, as a negative factor for such a situation, the number of victims of CET increased, having important repercussions nowadays, both in social and economic level.¹⁰

In this context, in view of the incidence of high accidents and violence, it is imperative that there be relevant studies on the subject, in addition to the inclusion of both professionals and the population in general, in order to have epidemiological interest, main reasons for hospitalizations, In addition to alerting about the interventions, seeking solutions to mobilize and make aware that the main change occurs in traffic.

Based on these considerations, it was based the proposal of this study that aimed to analyze hospitalizations of Cranioencephalic Trauma victims in an emergency and emergency hospital.

METHOD

An exploratory, descriptive, quantitative study, in which 128 medical records of CET patients admitted to the General State Hospital (GSH), located in the capital Maceió, in the State of Alagoas, were used. Emergencies, from January to March 2015. The following variables were analyzed: gender, age, origin, clinical aspects at admission, cause of CET, length of hospital stay, Glasgow Coma Scale score (GCS) At admission, hospital discharge and death. After collecting information, they were subjected to a descriptive statistical analysis in which the data were transferred to Microsoft Excel @ 2010 Software spreadsheets and Bioestat 5.3. The data were organized for the

Nascimento ET do, Maciel MPGS, Oliveira KCPN.

Epidemiological analysis of cranioencephalic...

construction of tables and figures, followed by analysis and discussion of the results.

The research project was approved by the Institutional Ethics Committee in Research of the State University of Health Sciences of Alagoas, under CAAE opinion 37736114.2.0000.5011.

A total of 128 patients with CET were admitted, admitted for the emergency of a public reference hospital in emergency and emergency, from January to March 2015. A predominance of males was observed, 113 (88.3%), and the age group of 21 to 30 years, totaling 28 (21.8%).

RESULTS

Table 1. Distribution of victims of Cranioencephalic Trauma as to gender and age group. Maceió (AL). Brazil, 2015.

Gender and Age group	N	%
Gender		
Male	113	88.3
Female	15	11.7
Age group		
0 --10	13	10.2
11--120	19	14.8
21--130	28	21.9
31--140	25	19.5
41--150	24	18.8
51--160	07	5.5
61--170	04	3.1
71--180	05	3.9
≥ 80	03	2.3
Total	128	100

Regarding the origin of the patients, the majority, 67 (52.3%), were from Maceió, while in other cities, 61 (47.6%).



Figure 1. Distribution of victims of cranioencephalic trauma as to the origin. Maceió (AL). Brazil, 2015.

The main causes of CET were: 59 (49.0%) due to traffic accident; regarding the associated lesions, it was predominant the

Face Trauma, with 33 (25.8%), followed by abrasions, 20 (15, 2%), and fractures, 17 (13.3%).

Table 2. Distribution of Cranioencephalic Trauma victims regarding the causes of TBI. Maceió (AL). Brazil, 2015.

External causes	N	%
Fall from own height	09	7.0%
Fall from a height	23	18.0%
Physical aggression	07	5.5%
Perfuration by White Weapon	03	2.3%
Perfuration by Firearm	03	2.3%
Home Accident	04	3.1%
Traffic accident	59	49.1%
Electric shock	03	2.3%
Killing	13	10.2%
Uninformed	04	3.1%
Total	128	100.0%

The main clinical aspects presented were: (32.03%); headache, 15 (11.71%); vomiting, Lowering of the level of consciousness, 41 ten (7.81%); coma, 08 (6.25%).

Table 3. Distribution of patients suffering from Cranioencephalic Trauma by Clinical Aspects. Maceió (AL). Brazil, 2015.

Clinical aspects	N	%
Lowering the Level of Consciousness	41	32.03%
Headache	15	11.71%
Vomiting	10	7.81%
Coma	08	6.25%
Seizure	02	1.56%
Periorbital hematoma	09	7.03%
Dyspnea	02	1.56%
Sleepiness	05	3.90%
Otorragia	07	5.46%
Rhinorrhage	01	0.78%
Dizziness	01	0.78%
Anisocoria	01	0.78%
Total	128	100%

In the observation of the evaluation of the level of consciousness, it was observed that of the 128 patients who were victims of CET according to table 4, 49 (38.28%) had mild CET, 23 (17.96%) were confirmed with moderate CET and In 40 (31.25%) patients severe CET was present.

Table 4. Distribution of patients suffering from Cranioencephalic Trauma by severity according to the Glasgow Coma Scale. Maceió (AL). Brazil, 2015.

Gravity of lesion	N	%
Light	49	38.3%
Moderate	23	18.0%
Grave	40	31.3%
Not informed	16	12.5%
Total		100%

DISCUSSION

In this study, 88.28% of the victims of CET were of the masculine gender, being a data compatible with the literature. It should be noted that this result is due to the greater exposure of males to risk factors for CET, such as traffic accidents, and to violence, since people of this sex have more access to cars and perform more tasks and/or perform activities outside their homes more frequently and thus expose themselves more to risk conditions.¹¹⁻²

It was found that 21.87% of the victims of CET were between 21 and 30 years old, belonging to the group of young adults. Some authors^{11-2,16} have similar results to this study, thus associating such data with behavior. The inexperience, search for emotions and sensations of risk and impulsivity are terms associated with behavior that may contribute to a higher incidence of traffic accidents in this age group. It should be noted that the variations that can be evidenced regarding the causes of CET may differ according to the population and region studied. In a similar

study, the most evident age group was below 15 years (44.3%).

Regarding the origin of the victims, the majority came from the capital. However, 47.66% come from the interior of the state. It is noteworthy that, in a similar study in Pernambuco, 55.24% came from the capital where the hospital is mentioned as a reference. It is worth stressing the importance of the State General Hospital (SGH) as a reference in emergency and emergency care, with coverage in the State of Alagoas.¹³

The causes of CET may differ, according to some studies. In this study, traffic accidents (including motor vehicle accidents and motorcycle accidents) were the main causes of hospitalization for CET, accounting for 49.1%, followed by falls in height (18%).

Traffic accidents are important causes of CET in a study carried out in Pelotas / RS¹¹ and in the northeast¹⁵, with vehicle collision, followed by trampling, the main factors in the latter. In SGH-AL, it was observed that, among the accidents with means of transport, the trampling was the main causes of CET in the hospitalized victims.

With the stratification regarding the causes of CET, it was verified the predominance of falls of height and trampling, probably because it is a referral hospital of the public network where the majority of the attended population does not have motorized vehicle, emphasizing, also, the large number of victims from the interior of the State (61%), where car accidents are less frequent. Falls are described as the main causes of CET by several authors^{11,15}, depending on the environment and population studied. In addition to accidents with means of transport and falls as important causes of CET, authors emphasize the importance of urban violence and physical aggressions as increasing causes of mechanical trauma in large metropolis¹¹, and this fact is also verified in this study, highlighting the importance of urban violence as the cause of CET.¹¹

Injuries caused by traffic accidents, such as CET, have left young people, who are fully functional, unfit for work and, moreover, cause deaths and disabilities.¹⁶ The analysis of patients, victims of traffic accidents, attended at a rehabilitation and rehabilitation has identified another cranioencephalic (CET) as the most prevalent neurological lesion. This lesion is associated with a large proportion of disabilities, with a delayed or even uncertain return to productivity.¹⁷ Clinical aspects from trauma, lowering of the level of consciousness (32.03%) also predominated, considering another similar study as a symptom most

common lesion. It should be emphasized that, during the analysis of the medical records, the authors decided to determine and describe all the aspects exposed by the team at the admission of the patient. Therefore, studying this variable is extremely important, since the initial clinical manifestation is a strong indicator of the severity of the primary and secondary lesions associated with the CET,¹⁵ requiring the attention of the health professionals to these more present signs and symptoms, in order to to evaluate possible brain lesions after trauma.

As for its severity, CET is classified as mild, moderate and severe using the Glasgow Coma Scale (GCS) scores, used universally for the evaluation of the level of consciousness, based on the investigation of three parameters: ocular opening, verbal response and motor response, taking as minimum score three and maximum, 15.¹²

The GCS score was verified in 112 charts, with mild CET morbidity more prevalent, corroborating with other authors.¹⁶

Initially, the GCS was developed to evaluate the deterioration of how or to improve and to predict outcomes. Subsequently, it was used as a clinical indicator for interventions. The categorization of CET severity: mild, for those between 15 and 13 points; moderate, when from 12 to nine and severe if you are eight or less. CET is considered the most important cause of disability and more frequent neurological cause of morbidity. As a consequence, there is a growing interest in instruments to monitor recovery after its occurrence.¹⁶

It can be noticed that, in relation to the length of hospital stay, the prevalence was between one and seven days (57.03%). Regarding the outcome, 80 (62.50%) were discharged, while 24 (18.75%) evolved to death. This occurred in a study that addressed the profile of hospitalizations in which 88.12% evolved to hospital discharge and 7.92% to death.¹¹

From these data, it is well known that the analysis of the described variables is essential for the knowledge about the epidemiology of hospitalizations for CET, since the recovery of such patients affected by this type of trauma is more time consuming and requires more specialized and intensive care, stressing that there is a cost in the public health budget. Therefore, effective prevention and care strategies associated with the training of health professionals and the population in general have been described as elements that significantly reduce the high morbidity and mortality rates in Brazil.

CONCLUSION

This study allowed to identify that the majority of the patients affected by CET in Alagoas is male, in the age group of 21 to 30 years. In relation to the severity of CET, it was lighter, to the detriment of the severe and moderate.

Knowing the causes of hospitalizations due to CET, as well as other epidemiological aspects, enables the implementation of measures to control risk factors. In addition, the elaboration and implementation of treatment protocols for CET in hospital units aimed at reducing the associated morbidity and mortality, related to advances in initial care and intensive care, is added.

The survey about the causes of CET hospitalizations will allow the emergence of suggestions, critiques and actions that contribute, in primary and secondary care, to the reduction of these aggravating factors, guaranteeing the integral and continuous assistance to the individuals involved.

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Nascimento ET do, Maciel MPGS, Oliveira KCPN.

Epidemiological analysis of cranioencephalic...

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