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CLINICAL - EPIDEMIOLOGICAL PROFILE OF PATIENTS DIAGNOSED WITH TBI (TRANIAL BRAIN TRAUMA): SYSTEMATIC REVIEW OF THE LITERATURE

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Abstract: Traumatic brain injury (TBI) is a complex condition and is the main cause of death and sequelae in children and young adults in developing countries. It is important to identify early the main epidemiological, pathophysiological, clinical and diagnostic factors involved in the natural history of the disease. Falls are the main causes of TBI and those resulting from height are more prevalent in children and the elderly. The objective of the study is to understand the clinical-epidemiological profile, which helps medical assistance. This way, we elucidate the main evidence regarding the level of severity, the cause of the patients' trauma and the recovery process and the care needed after hospital discharge.
Keywords: Clinical-epidemiological profile, traumatic brain injury, diagnosis and treatment.

INTRODUCTION

Traumatic brain injury (TBI) represents a complex condition that requires a comprehensive approach to understand its clinical-epidemiological profile. This analysis seeks to explore not only the clinical symptoms and specific characteristics of brain injuries, but also the epidemiological factors that influence the incidence and distribution of this condition. (ALMEIDA et al., 2016)

TBI results from various impacts to the head, including different causes, such as traffic accidents, falls, sporting events, physical attacks and occupational accidents. The severity of injuries can vary from mild to severe, with clinical manifestations ranging from changes in consciousness to lasting neurological complications. (MAGALHÃES et al., 2022)

Understanding this profile is essential for the adequate provision of medical care, but also for the development of effective preventive strategies. In summary, we will

outline the essential elements that make up the clinical-epidemiological profile of TBI, emphasizing its complexity and need for integrated approaches to effectively manage this challenging health condition. (OLIVEIRA et al., 2021)

METHODS

The present study is a systematic review, available in the PubMed and Scielo databases. It is characterized by being an analytical, prospective study, with a qualitative approach and descriptive in nature. The theme and the following question were delimited: What are the clinical and epidemiological characteristics of patients with traumatic brain injury? Terms were chosen in Portuguese using Health Sciences Descriptors (DeCs) and terms in English using Medical Subject Heading (MeSH). The locations where the search would take place were established, as well as the inclusion and exclusion criteria for studies.

The established inclusion criteria were: original articles available in electronic format, free of charge and in full, written in Portuguese, English or Spanish, with a time limit of 2015 to 2023 and that were compatible with the objective of the research. The investigation was carried out in December 2023, in which 10 articles were selected because they were compatible with the study carried out. To search the databases, the following Boolean operators were used: AND / OR, to improve the search in the databases. Therefore, we will use the following descriptors in Health Science (DeCS) and Medical Subject Headings (MESH): Clinical epidemiological profile OR traumatic brain injury AND diagnosis OR treatment, which were performed in different combinations. Concomitantly, opinion articles, dissertations, letters to the editor and studies not correlated with the research objective were excluded.

RESULTS AND DISCUSSIONS

Traumatic brain injury (TBI) is a structural injury to the skull caused by an external force that damages the brain parenchyma and interstitium. Traumatic brain injury can have several causes, such as: car accidents, falls, gunshot wounds or even physical violence. Responsibility for morbidity and mortality in multiple trauma patients (MAGALHÃES et al., 2017; OLIVEIRA et al., 2021). Mortality from traumatic brain injury is related to age, with a higher number of deaths among the elderly. In children, head injuries are the leading cause of death from traumatic accidents. However, the mortality rate among children is lower than that of adults. (OLIVEIRA et al., 2021). Almeida (2015), in Brazil, observed that among a whole range of injuries caused by external causes, (TBI) stands out both in terms of death and injury and is one of the most common injuries, mainly affecting people between 20 and 29 years old. However, Magalhães (2017) showed that the most affected age group is patients under 40 years of age. The data show that the number of hospitalizations increased significantly between 2001 and 2007 and the mortality rate remained high. Between 2008 and 2012, hospitalization rates increased among men, leading to more serious injuries, longer hospitalizations and higher mortality (MAGALHÃES et al., 2017).

Depending on the patient's clinical condition, which is classified as mild, moderate or severe, the damage can be temporary or even permanent. Regarding the type of injury, it is divided into primary or secondary, open or closed. The consequences of traumatic brain injury have a significant impact on quality of life, with death being the most serious consequence of the trauma (OLIVEIRA et al., 2021). A public health problem is evident due to the significant increase in morbidity and mortality for specific populations of specific age groups.

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Accidents with transport vehicles are one of the main causes of traumatic brain injury, with motorcycle accidents being the most important, with a frequency corresponding to 30.5% of detected cases. However, some studies indicate that falls are one of the main causes of head injuries, especially falls from heights. The high incidence of these falls is linked to certain age groups, with the elderly or children having the highest incidence. In the case of the elderly, this is due to the physiological changes they experience over time. For children, these measures are justified based on developmental characteristics, as well as child behavior (CONSTÂNCIO et al., 2018). Injuries associated with TBI depend on the mechanisms and kinetic energy exerted on the individual.

In this topic, greater or equal frequencies of trauma (abdomen, chest, face and extremities) and autophagy were reported, while systemic fractures were reported at lower frequencies. In this study, the most common injuries were abrasions and contusions without documented fractures, as well as multiple injuries without documented fractures and/or sprains. (CONSTÂNCIO et al., 2018). The mortality rate in the present study was 11.1%, with 66.3% of these cases corresponding to individuals with severe ECG records. In this regard, studies have shown an inversely proportional relationship between the number of deaths and the initial ECG score, that is, the lower the ECG score, analyzed

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immediately after the trauma event, the higher the mortality rate among individuals. A significant number of medical records without ECG recording were identified in the present study (26.2%). However, as observed in other studies, TBI always prevails over other severities and death rates. (CONSTÂNCIO et al., 2018).Furthermore, it is also known that the level of severity, the cause of the trauma and the educational level of the patients are interconnected in terms of recovery and the care that will be needed after hospital discharge, in relation to the various existing rehabilitation programs. (OLIVEIRA et al., 2021). Caring for patients who are victims of TBI demands that the therapy used be carried out holistically, encompassing all patients in a biopsychosocial way. During recovery, the patient's depreciation in relation to their body is observed, due to marks and possible sequelae. Due to trauma, 50% of individuals are diagnosed with depression, on average one year after the incident. Eventually, rehabilitation treatment with a multidisciplinary team is indicated, meeting the basic needs of this individual (OLIVEIRA et al., 2021).

CONCLUSION

The results of this study made it possible to describe the profile and clinical-epidemiological characteristics of individuals with a history of Traumatic Brain Injury according to sex, age group and its non-violent and violent causes. The results made it possible to identify, in the studied population, that TBI predominates among individuals who suffered non-violent accidents. Generally, those involving falling from height are more prevalent among the elderly and children.

In relation to accidental falls, children are more prone, due to their predisposition to adventures and games inside and outside the home, often not having the scale of the risks to which they are prone. Furthermore, the developmental characteristics of children, whose curiosity, immaturity and lack of motor coordination place them in risky situations, factors that can also be combined with inadequate supervision. The susceptibility of the elderly may be related to the total loss of postural balance, due to the sudden insufficiency of the neural and osteoarticular mechanisms involved in maintaining posture.

When it comes to violent causes, there was a prevalence of TBI cases in males, aged between 20 and 29 years. This higher incidence of TBI in males can be explained by numerous factors, such as: a large increase in users of this type of transport (motorcycles) and differences in exposure to risk for this gender, as young men have a strong relationship with some characteristics that they are characteristic, like immaturity; feeling of impunity, which may or may not be associated with the use of Alcohol and drugs; speeding; reckless maneuvers and failure to use mandatory safety equipment.

Commonly, a traffic accident is generated by several factors that involve human error, environmental conditions and mechanical failures, which can be associated with a lack of vigilance on the part of inspection bodies and the recklessness and impunity of offenders. The results showed the predominance of non-violent causes that can be avoided, mainly, through preventive educational and inspection measures, whether these are prevention campaigns on the roads, in schools, or the dissemination of prevention advertisements through the mass media.

The main injuries associated with TBI found were: the occurrence of trauma to the abdomen, chest, face and limbs, these being abrasions and contusions without records of fractures; polytrauma; otorrhagia and, to a lesser extent, systemic fractures.

The results of this study also highlight the disparity in epidemiological data between

regions and emphasize the urgent need for more complete and systematic documentation to better understand the magnitude of TBI. In Brazil, the lack of detailed data highlights the importance of improving health information systems. This is crucial to building a solid foundation for more effective national policies and actions.

REFERENCES

ALMEIDA, C. E. R. et al. **Traumatic Brain Injury Epidemiology in Brazil. World Neurosurgery**, v. 87, p. 540–547, mar. 2016.

CONSTÂNCIO, J. F. et al. **PERFIL CLÍNICO-EPIDEMIOLÓGICO DE INDIVÍDUOS COM HISTÓRICO DE TRAUMATISMO CRANIOENCEFÁLICO.** Revista Baiana de Enfermagem, v. 32, 27 dez. 2018.

MAGALHÃES, A. L. G. et al. **Epidemiologia do traumatismo cranioencefálico no Brasil.** repositorio.ufmg.br, 2017.

MAGALHÃES, A. L. G. et al. **Traumatic brain injury in Brazil: an epidemiological study and systematic review of the literature.** Arquivos de Neuro-Psiquiatria, v. 80, p. 410–423, 20 abr. 2022.

OLIVEIRA, M. F. et al. **Implicações Biopsicossociais do Traumatismo Cranioencefálico: Revisão Integrativa da Literatura / Biopsychosocial Implications of Head Trauma: Integrative Literature Review.** ID on line. Revista de psicologia, v. 15, n. 57, p. 376–390, 31 out. 2021.