

Profile of victims care for traumatic brain in a public hospital in the federal district

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Perfil de la atención a víctimas de cerebro traumático en un hospital público del distrito federal

RESUMO

Objetivo: verificar o perfil dos pacientes com traumatismo cranioencefálico transportados pelo serviço aeromédico e serviço terrestre para um hospital público do Distrito Federal. Método: Estudo quantitativo de caráter descritivo, transversal e analítico, utilizando dados do livro de admissões da sala vermelha, no período de janeiro de 2018 a janeiro de 2019. O processamento e análise dos dados foi realizado pelo programa Microsoft Office Excel® 2010. Resultados: 149 pacientes, maioria do sexo masculino, faixa etária de 40 a 49 anos, média de 38 anos. 45,6% apresentaram traumatismo cranioencefálico grave. O principal mecanismo de trauma foi atropelamento (19,5%). 25,5% foram encaminhados para o Centro Cirúrgico, 15,4% evoluíram para óbito. Conclusão: os resultados descritos contribuem para que gestores implementem ações que melhorem a qualidade do atendimento pré e intra-hospitalar, desenvolvendo estratégias para uma atenção terciária mais resolutiva, reduzindo cada vez mais os agravos relacionados ao traumatismo cranioencefálico, além de realizar ações de prevenção.

DESCRIPTORES: Perfil de saúde; Acidentes; Traumatismos craniocerebrais; Serviços médicos de emergência.

ABSTRACT

Objective: to verify the profile of patients with traumatic brain injury transported by the air medical service and ground service to a public hospital in the Federal District. Methods: Descriptive, cross-sectional and analytical quantitative study, using data from the red room admissions book, from January 2018 to January 2019. Data processing and analysis was performed using the Microsoft Office Excel® 2010 program. Results: 149 patients, most of them male, age range from 40 to 49 years, mean of 38 years. 45.6% had severe traumatic brain injury. The main trauma mechanism was being run over (19.5%). 25.5% were referred to the Surgical Center, 15.4% died. Conclusion: the results described help managers to implement actions that improve the quality of pre- and intra-hospital care, developing strategies for more resolute tertiary care, increasingly reducing injuries related to traumatic brain injury, in addition to carrying out prevention actions.

DESCRIPTORS: Health profile; accidents; Craniocerebral injuries; Emergency medical services.

RESUMEN

Objetivo: verificar el perfil de los pacientes con trauma craneoencefálico transportados por el servicio médico aéreo y terrestre a un hospital público del Distrito Federal. Método: Estudio cuantitativo descriptivo, transversal y analítico, utilizando datos del libro de admisiones de la sala roja, de enero de 2018 a enero de 2019. El procesamiento y análisis de datos se realizó mediante el programa Microsoft Office Excel® 2010. Resultados: 149 pacientes, la mayoría ellos masculinos, rango de edad de 40 a 49 años, promedio de 38 años. El 45,6% presentaba traumatismo craneoencefálico grave. El principal mecanismo traumático fue el atropello (19,5%). El 25,5% fueron derivados al Centro Quirúrgico, el 15,4% fallecieron. Conclusión: los resultados descritos ayudan a los gestores a implementar acciones que mejoren la calidad de la atención pre e intrahospitalaria, desarrollando estrategias para una atención terciaria más resolutiva, reduciendo cada vez más las lesiones relacionadas con el traumatismo craneoencefálico, además de realizar acciones de prevención.

DESCRIPTORES: Perfil de salud; accidentes; lesiones craneoencefálicas; Servicios médicos de emergencia.

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INTRODUCTION

The Health Care Networks emerged as a way to overcome the fragmentation of the system and generate more efficient actions in the three levels of complexity: primary care, secondary and tertiary care, each level of care has resources to resolve demands according to complexity.⁽¹⁾

Tertiary care is essential in providing services to critically ill clinical and trauma patients. Trauma is an important public health problem that has gained prominence in recent years, as it causes a great personal and economic impact on society. The World Health Organization (WHO) estimates that more than 45 million people across the planet suffer from moderate or severe disability each year due to trauma.⁽²⁾⁽³⁾

To articulate the emergency care points, the Trauma Care Line was created. Nine objectives were defined: trauma surveillance and prevention, qualification of trauma centers for a hierarchical and referenced service, directing trauma victims to units according to the required complexity, expand and qualify hospital beds in addition to rehabilitation, develop educational processes for health professionals from the entire health care network, create adequate assistance after hospital discharge, define a line of care from the scene to rehabilitation, guarantee beds for trauma victims and promote a referral system among emergency services.⁽⁴⁾

The survival of trauma victims is associated with the speed of care and pre-hospital transport, often land transport for various reasons is unable to provide

this care in a timely manner, therefore, the air rescue modality was instituted. All inter-hospital transport or rescue aircraft must be considered Advanced Life Support.⁽⁵⁾

Given this scenario, in addition to the pre-hospital service, highly complex hospital care institutions acquire notoriety due to the health service they provide to the population. Trauma patient care should be carried out through integrated care systems that include prevention, pre-hospital care, hospital care and rehabilitation.⁽⁶⁾

The Hospital de Base do Distrito Federal stands out in this scenario for being an institution that has a reference trauma unit for the DF and surroundings, composed of an Advanced Trauma Support Unit (USAT), that can be considered a semi-intensive care unit.⁽⁷⁾

In this way, the Hospital de Base Trauma Center is a reference for all other hospitals in the Federal District network⁽⁸⁾, offering assistance to patients at imminent risk of death, for example, victims of trauma in its various forms, in particular, the cranioencephalic trauma. It is considered a specialized hospital because it has several reference services qualified in high complexity, including neurosurgery, which is indispensable for the care of patients diagnosed with TBI. Therefore, it becomes conducive to know the profile of individuals who are assisted daily in the aforementioned institution.⁽⁹⁾⁽¹⁰⁾

Currently, traumatic brain injury (TBI) affects many people worldwide and is considered one of the major causes of morbidity and mortality in the population, with a mortality rate of 30% in severe TBI, and having as its main sequela significant and permanent neurological impairment. (11) The initial assessment of the TBI patient in the pre-hospital care mainly includes knowledge about accident data and application of the Glasgow Coma Scale (GCS), which is performed from the simple physical examination containing data such as eye opening, verbal and motor response. Based on the score obtained on the ECG (3 to 15 points), TBI can be classified as mild (13 to 15), moderate (9 to 12) or severe (3 to 8), also considering pupillary reactivity as an indication of lesser or greater TBI severity, therefore a worse prognosis.⁽¹²⁾⁽¹³⁾

In this perspective, the objective of this study is to verify the profile of patients with traumatic brain injury transported by air medical service and ground service to a public hospital in the Federal District.

METHODS

Quantitative, descriptive, cross-sectional and analytical study, with data extracted from the red room admissions book used as control by the team. It was carried out in the red room of the Centro de Trauma Hospital de Base do Distrito

Federal (HBDF - IGESDF), from January 2018 to January 2019.

The sample consisted of patients who met the following inclusion criteria: TBI diagnosis, first appointment in the red room; means of transport by air medical from CBM/DF (Military Fire Brigade of the Federal District) or land by SAMU or CBM/DF.

Data were collected through the records of admissions to the Red Room of Trauma, where a data table containing information related to the patients treated was used. The record was made by tabulating these data into the Microsoft Office Excel 2010* program. The following variables were considered: glasgow coma scale; gender; age; mechanism of trauma; means of pre-hospital transport (air medical or land transport); outcome.

They were analyzed using the Microsoft Office Excel 2010* program, being consolidated in the form of tables, describing the categorical variables through distributions of absolute and relative frequencies and percentages, in addition to the means of numerical variables.

The research followed resolution 510/2016 and was approved by the Research Ethics Committee of Centro Universitário IESB-DF, CA-AE34510920.1.0000.8927opinion n° 4.341.442.

RESULTS

There were 149 hospitalizations due

to TBI. When analyzing TBI according to classification, a higher number of hospitalizations due to severe TBI (45.6%), followed by mild TBI (25.5%) and moderate TBI (10.7%) were observed.

When evaluating hospitalizations for TBI according to sex, it is observed that there were more admissions of males (77.2%).

With regard to age group, the highest number of hospitalizations is observed in the 40-49 age group (19.5%), followed by 20 to 29 years (18.8%), 30 to 39 years (16.1%), 60 years and over (15.4%), 50 to 59 years (8.1%), 15 to 19 years (6.7%), 5 to 9 years (4.0%), 1 to 4 years (3.4%), 10 to 14 years (2.7%) and < 1 year (0%). Ignored add up to 5.4%. The average age is 38 years.

Considering the trauma mechanism, the mechanisms with the highest percentages of hospitalizations due to TBI were being run over (19.5%), followed by falls from heights (12.8%), firearm perforation (FAP) (12.1%). Fall from Standing Height (10.7%), Other Traumatic Causes (10.7%), Aggression (9.4%). It is noteworthy that the first three mechanisms correspond to 44.4% of admissions.

Analyzing the outcome of TBI victims, it is observed that 15.4% died, while 25.5% were referred to the operating room, 22.8% to the USAT, 16.8% to the wards and 9.4% to the ICU.

The main pre-hospital care was provided by CBM/DF (37.6%), while SAMU/DF was responsible for 32.7%,

Table 1: Classification of TBI according to the ECG of TBI victims treated at the Red Trauma Room at Hospital de Base in the Federal District. Brasilia – January 2018 to January 2019.

Variables	N = 149 (%)
Glasgow Coma Scale (GCS)	
13 to 15 points (mild TBI)	38 (25,5%)
09 to 12 points (moderated TBI)	16 (10,7%)
03 to 08 points (severe TBI)	68 (45,6%)
Ignored	27 (18,1%)

Source: Red Room of Trauma database (HBDF - IGESDF)
Caption: TBI: Traumatic brain injury

aeromedical transport 20.8%, SAMU/GO 4.7% and private ambulance 4.0%.

With regard to the deaths of patients victims of TBI related to pre-hospital transport, 43.5% were transported by CBM/DF, 30.4% SAMU/DF 21.7% by aeromedical service and 4.3% SAMU/GO.

DISCUSSION

When observing hospitalizations, severe TBI had the highest number of hospitalizations in the study, which corroborates studies carried out in Sergipe (55.2%) and in the Federal District (33.6%), where the highest number of hospitalizations of patients with severe TBI prevailed.^{(14) (15)} However, this data differs from some studies carried out in other states, which show a higher number of hospitalizations for mild or moderate TBI in hospitals in the interior of Bahia (36%) and in a reference hospital for polytrauma patients in Sorocaba (82.4%).^{(11) (12)}

Regarding age and gender, the findings of this study corroborate a survey carried out in previous years in the national context, which demonstrates a higher prevalence of TBI in male patients aged between 21 and 60 years.⁽¹⁶⁾

Currently, trauma is considered by some authors as a public health problem, as it is one of the main causes of morbidity and mortality in the active age group of the population. Some studies suggest a higher number of hospitalizations due to TBI in males of working age due to the greater exposure of these individuals to risk factors such as car accidents and violence.^{(17) (18)}

As for the trauma mechanism, studies carried out in other regions of Brazil found similar results, as they show traffic accidents as the first cause of TBI and falls as the second cause. A study carried out in Pará indicates being run over as one of the main trauma mechanisms for TBI.^{(19) (20)}

Analyzing the initial care provided to TBI victims, air transport of TBI

Table 2: Characterization of the sample according to age, sex and trauma mechanism of TBI victims treated at the Trauma Red Room of the Hospital de Base in the Federal District. Brasilia – January 2018 to January 2019.

Variables	N = 149 (%)
Age	
Under 1 year	0 (0%)
1 to 4 years	5 (3,4%)
5 a 9 years	6 (4,0%)
10 a 14 years	4 (2,7%)
15 a 19 years	10 (6,7%)
20 a 29 years	28 (18,8%)
30 a 39 years	24 (16,1%)
40 a 49 years	29 (19,5%)
50 a 59 years	12 (8,1%)
60 years e mais	23 (15,4%)
Ignored	8 (5,4%)
Average	38 anos
Gender	
Male	115(77,2%)
Female	34 (22,8%)
Trauma mechanism	
Run over	29 (19,5%)
Height fall	19 (12,8%)
FAP	18 (12,1%)
Fall from own height	16 (10,7%)
Other traumatic causes	16 (10,7%)
Rollover	15 (10,1%)
Aggression	14 (9,4%)
Car x Motorcycle collision	6 (4%)
Motorcycle crash	6 (4%)
Collision with fixed object	3 (2%)
Collision between car and other vehicles	3 (2%)
Car X car Collision	2 (1,3%)
PMW	1 (0,7%)
Electric shock	1 (0,7%)

Source: Red Room of Trauma database (HBDF - IGESDF)

Caption: PAB: Perforation by melee weapon | PAF: Perforation by firearm

victims was observed in only 20.8% of cases, which can be justified by the fact that the service is limited due to the need for a cautious indication for its use, performing a screening that considers factors such as the patient's clinical condition, geographic conditions of

each region, distance from the reference center and access conditions.⁽²¹⁾

With regard to the outcome of patients suffering from TBI, a study carried out in Pará in previous years shows that only 12% of patients diagnosed with TBI were referred to the Surgi-

cal Center, this data differs from that found in the present study. Favorable outcomes can be explained, as the Hospital de Base has a Neurosurgery Unit, which can quickly and efficiently assess patients with TBI and refer them to appropriate treatment.^{(20) (22)}

As for the intersection of the variables deaths with pre-hospital transport, the present study showed that most deaths (43.5%) occurred in patients transported by land by CBM/DF. A study carried out in Pará demonstrates that, according to the statements of the members of the corporation, the initial service is often performed in a deficient and inappropriate way, pointing to the need for professional qualification, also reported the need for a health professional in the composition of the team to perform invasive procedures during the initial care in order to provide more adequate assistance to patients.⁽²³⁾

A study carried out in previous years suggests that the pre-hospital care provided by the SAMU obeys a team service dynamics both in basic life support, when the technician or nursing assistant is in direct contact with the regulating physician, carrying out determined and appropriate actions for patients, or in advanced support, when professionals such as doctors and nurses make up the team that mans the vehicle, this teamwork carried out by health professionals in the APH can positively impact morbidity and mortality rates due to trauma, causing them to become lower.⁽²⁴⁾

A study carried out in another region shows a mortality rate of 19% in TBI patients treated by SAMU, and emphasizes that this mortality rate is influenced by the response time, which comprises the time between the call via telephone and the arrival of the vehicle at the location, in addition to the travel time from the accident site to the counter-reference, that is, the shorter the response time, the more chances the victim has of a favorable outcome. In the present study, TBI patients assisted

Table 3 - Characterization of the rescue of TBI victims treated at the Red Trauma Room of the Hospital de Base in the Federal District. Brasilia – January 2018 to January 2019.

Variables	N = 149 (%)
Transportation	
CBM/DF	56 (37,6%)
SAMU/DF	49 (32,9%)
Aeromedical	31 (20,8%)
SAMU/GO	7 (4,7%)
Private ambulance	6 (4,0%)
Outcome	
Surgery Center	38 (25,5%)
USAT	34 (22,8%)
Nursery	25 (16,8%)
Death	23 (15,4%)
ICU	14 (9,4%)
Yellow room	7 (4,7%)
Ignored	6 (4,0%)
Neurocardiovascular Center	1 (0,7%)
Private Hospital	1 (0,7%)

Source: Red Room of Trauma database (HBDF - IGESDF)
Caption: CBM/DF: Military Fire Brigade of the Federal District | SAMU: Mobile Emergency Care Service | USAT: Advanced Trauma Support Unit | ICU: Intensive Care Unit

Table 4 - Characterization of deaths due to TBI related to the transport of patients assisted in the Red Trauma Room of the Hospital de Base in the Federal District. Brasilia – January 2018 to January 2019.

Variables	N = 149 (%)
Outcomes	
Other outcomes	120 (80,5%)
Death	23 (15,4%)
Ignored	6 (4%)
Transportation	
CBM/DF	10 (43,5%)
SAMU/DF	7 (30,4%)
Aeromedical	5 (21,7%)
SAMU/GO	1 (4,3%)

Source: Red Room of Trauma database (HBDF - IGESDF)
Caption: CBM/DF: Military Fire Brigade of the Federal District

by SAMU/GO died in 4.3% of cases, which can be explained by the distance between the surrounding cities and the HBDF trauma center.⁽²⁵⁾

Research carried out in São Paulo demonstrates that when the aeromedical service is displaced, as it is advanced life support and has a doctor and nurse

on the team, invasive procedures can be performed on the scene, in patients with lowered level of consciousness, orotracheal intubation, when necessary and promptly performed, is considered an essential procedure to prevent injuries.

(5)

CONCLUSION

The results of the present study made it possible to characterize the profile of patients diagnosed with TBI treated in the red trauma room of the Hospital de Base in the Federal District during the

analyzed period, as well as to know the profile of these hospitalizations based on the proposed variables. There was a need for special attention to male adult patients, since they are the most affected by TBI. In view of the observed aspects, it is essential to create public policies that strengthen pre-hospital and intra-hospital care.

In this sense, the results described contribute so that managers can implement actions that improve the quality of pre- and in-hospital care, developing strategies for a more resolute tertiary care, increasingly reducing the injuries

related to TBI, in addition to carrying out preventive actions.

The present study has weaknesses in terms of data collection, since incomplete data were found in the admissions book.

This work stimulates discussions and production of new research on the theme of TBI and its variables, thus expanding the quality of medical and nursing care provided in the pre- and intra-hospital context to the patient who is a victim of TBI.

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