

Epidemiological and Clinical Profile of Cranio-Encephalic Trauma (TCE) at the Inera Yangambi General Hospital

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ABSTRACT

Cranio-encephalic trauma represents a 30-millisecond event, the leading cause of death or severe disability in young adults. It is therefore necessary to determine the nature and extent of the lesions as quickly as possible because the situation can deteriorate very quickly in the following days. Overall mortality remains heavy and sequelae frequent, which poses the problem of socio-professional and family reintegration.

At the end of this study, we arrived at the following results:

- The prevalence of patients with cranio-encephalic trauma admitted to the General Hospital of INERA YANGAMBI was 44.5% during the period of our study;
- Most of our patients were male with 68.4%;
- The 20 to 29 age group was more affected;
- The students were more victims of cranio-encephalic trauma ;
- Road traffic accidents are the main etiology of cranio-encephalic trauma with 70.4% of cases in our research environment;
- The abrasion was the most observed anatomo-pathological lesion with 64.3% ;
- The majority of our patients had a clear conscience on admission with 72.5%;
- the evolution of the majority of patients was marked by an improvement with 62.2% ;

KEYWORDS: cranioencephalic trauma, epidemiology and clinic

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INTRODUCTION

Cranio-encephalic trauma represents a 30-millisecond event, the leading cause of death or severe disability in young adults. [1].

Faced with the victim of an accident, it is therefore necessary to determine the nature and extent of the injuries as quickly as possible. Traumatic brain injury (TCE) is a special case, it is a potentially serious condition; even in the absence of clinical and radiological lesions, the situation can deteriorate very quickly in the following days.

It is an economic and social phenomenon that affects young people. Traffic accidents are the biggest contributors to this condition.

Traumatic brain injury is a serious public health problem, often referred to as a silent epidemic due to a lack of public awareness [8]. TCE is still the leading cause of mortality and morbidity worldwide for people under the age of 45 [9].

Overall mortality remains heavy and sequelae frequent, which poses the problem of socio-professional and family reintegration. TCE remains one of the leading causes of mortality in young adults in France (22/100,000 inhabitants) and morbidity since more than half of the serious head injuries that occur have significant sequelae. There are an estimated 350 severe traumatic brain injuries (TCG) per 100,000 inhabitants in France [2].

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It is estimated that 5.3 million Americans live with a disability resulting from TCE and note that mild TCE alone costs the nation \$17 billion each year [4,5].

In the DRC, a study on cranio-encephalic trauma carried out in 2005 by Ntsambi EG, et al., on the clinical profile of cranio-encephalic trauma patients followed at university clinics in Kinshasa reported a death rate of 20.3% [6].

In Kisangani, Mapuku Bekunkanga Jude in 2012 carried out a study on the epidemiological and clinical profile of cranio-encephalic trauma at the university clinics of Kisangani and found a death rate of 2.17% [7].

In yangambi, no study has been carried out on this subject, the increase in car traffic and especially two-wheeled vehicles (motorbikes) causing accidents prompted us to carry out this study to have an idea in our environment.

The objective pursued in our study is to identify the epidemiological and clinical profile of cranio-encephalic trauma in Yangambi (the cranio-encephalic traumatized who were brought to the General Hospital of INERA YANGAMBI)

MATERIAL AND METHODS

II.1. Material

II.1.1. Description of the search field

The INERA YANGAMBI General Hospital was chosen as our research environment. It is located in the city of YANGAMBI, territory of Isangi in the province of Tshopo in the Democratic Republic of Congo.

II.1.2. Study population and sample

1°. Study population

The population of our study was composed of 256 patients, hospitalized and treated for various traumatological conditions at the surgery department of the INERA YANGAMBI General Hospital during the period from January 1 · 2020 to December 31, 2021, i.e. a period of 2 years. Among these 256 patients, 114 cases were hospitalized for traumatic brain injury.

2°. Sample

Of the 114 cases of traumatic brain injury, 98 met the inclusion criteria for our study and constituted our sample.

3°. Selection criteria

Were included in our study:

- All patients admitted and hospitalized in the Surgery Department of the INERA YANGAMBI General Hospital for cranio-encephalic trauma during the period of our study;
- Patients with a complete file that complies with our data collection sheet.

II.2. Methods

II.2.1. Type of study

This is a retrospective, cross-sectional study with a descriptive aim.

II.2.2. Data collection technique

Our study is retrospective, using the documentary technique which consisted in compiling the archived files of the patients, the registers of the operating room and the entries and exits of the patients.

To do this, a pre-established survey or research form was developed, the model of which is attached.

The data thus collected and grouped were analyzed using Excel software. Text entry and tables on Word software were useful for us to write the work. In order to exploit our data, we determined the frequencies, the percentage and the arithmetic mean using the following formulas:

The formulas are as follows :

$$\% = \frac{fo}{N} \times 100$$

% = Pourcentage

N = Taille de l'échantillon

fo = fréquence observée

$$\bar{X} = \frac{\sum xi.fi}{N} \text{ With: } X = \text{Average}$$

Σ = somme de la fréquence observée

N = nombre total de cas

Xi = milieu de classe

fi = fréquence individuelle

PRESENTATION OF THE RESULTS

III.1. Prevalence

Our study focused on 114 patients followed at the INERA YANGAMBI General Hospital for cranio-encephalic trauma, while 256 were admitted to the surgery department for various traumatic conditions during the period of our study from January 1 · 2020 as of December 31, 2021, i.e. a period of 2 years.

The 114 patients represent 44.5% of all traumatic brain injuries followed during the period of our study, the fatality rate was 3.1%.

III.2. Age

Table I: Representation of cases according to age groups

Age (in years)	Effective	%
0-9	5	5.1
10 - 19	9	9.2
20-29	32	32.6
30-39	24	24.5
40-49	16	16.3
50-59	9	9.2
≥60	3	3.1
Total	98	100

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This table shows that the most affected age group was that of 20-29 years with 32.6%, followed by that between 30-39 with 24.5%.

III.3. Sex

Table II: Sex data

Sex	Effective	%
M	67	68.4
F	31	36.6
Total	98	100

It emerges from this table that the male sex was more represented with 67 or 68.4%.

III.4. Level of study

Table III: Levels of study

Study level	Effective	%
University	41	41.8
Secondary	31	31.6
Primary	20	20.4
Illiterate	6	6.2
Total	98	100

On reading this table, we observe that 41.8% of our patients had a university education and 31.6% had a secondary education.

III.5. Marital status

Table IV: Presentation of cases according to marital status

Marital status	Workforce	%
Single	49	50
Married	34	34.7
Divorce	12	12.2
Widower	3	3.1
Total	98	100

It appears from this table that 50% of traumatic brain injury were single followed by married with 34.7%.

III.6. Occupation

Table V: Representation of cases by occupation

Occupation	Effective	%
Raised	35	35.7
Driver	20	20.4
Trader	18	18.4
State worker	18	18.4
Unemployed	7	7.1
Total	98	100

The analysis of this table shows that high school students were mainly affected with 35.7% followed by drivers with 20.4%.

III.7. Place of origin

Table VI: Place of origin of patients

Place of origin	Effective	%
Likango	38	38.8
Ekutshu	22	22.5
Lusambila	20	20.4
Bengali	9	9.2
Lumumba	6	6.1
Mall	3	3
Total	98	100

We notice in this table that most of our patients came from the Quartier with 38.8%, followed by those who lived in Quartier Ekutsu with 22.5%.

III.8. Etiological circumstances

Table VII : etiological circumstances observed

Circumstances	Effective	%
AT- R	69	70.4
Fight	14	14.3
Fall on a high place	9	9.2
White weapon	4	4.1
Fall of a heavy object	2	2
Total	98	100

This table VII shows that the road traffic accident was the predominant etiology with 70.4%.

III.9. Pathological lesions

Table VIII. Pathological lesions

Pathological lesions

Abrasion
 Simple eyelid bruise
 Wound on the face
 Scalp wound
 Cranial vault fracture
 single line
 depression
 Doorway
 Skull base fracture:
 Contusion and edema of the scalp
 Scalp hematoma
 Total

It appears from this table that abrasions were the most frequent anatomo-pathological lesions with 64.3%.

III.10. Clinical signs on admission

Table IX: Presentation of cases according to state of consciousness on admission

state of consciousness	Effective	%
Lucid	71	72.5
Coma Stage I	20	20.4

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Coma Stage II	5	5.1
Coma Stage III	2	2
Total	98	100

At the end of this table, it emerges that 72.5% of patients were lucid on admission

III.11. Location signs

Table XII: Localization signs observed

Location signs	Effective	%
None	83	84.7
Facial paralysis	6	6.1
Hemiplegia	4	4.1
Paraplegia	3	3.1
Unilateral mydriasis	2	2
Bilateral mydriasis	1	1
Total	98	100

Reading this table shows us that facial paralysis was the most common localization sign with 6.1% of cases, but in 84.7% of cases, no localization sign was observed.

III.12. Radiological data

Table XIII: distribution of cases according to the result of the radiography.

Radiological data	Effective	%
No visible radiological lesion	94	95.9
Pathological radiological lesions		
single line	2	2.1
Doorway	1	1
depression	1	2
Total	98	100

The analysis of this table shows that 95.9% of our patients their radiological results did not show lesions.

III.17. Evolution

Table XVIII: Representation of cases according to evolution

Evolution	Effective	%
Improvement	61	62.2
Healing	26	26.5
Stationary	4	4.1
Transfer	3	3.1
Escaped	1	1
Death	3	3.1
Total	98	100

It appears from this table that 62.2% of our patients had evolved towards improvement followed by 26.5% of patients who had evolved towards healing.

DISCUSSION

4.1. Prevalence

The prevalence of cranio-encephalic trauma is estimated at 44.5% in our study. Our result is close to that of Bighouab Hafida, in his study conducted in Morocco in 2010 on the management of cranio-encephalic trauma in the Neurosurgery department of the Mohammad VI university hospital center in Marrakech, found a prevalence of 59, 72% [19].

But higher than that of Kasongo L. in his study on the management of cranio-encephalic trauma at the university clinics of Kisangani had found 23.89% [17].

This high rate of cases of cranio-encephalic trauma in our environment is explained by the high frequency of road traffic accidents in relation to the deterioration of road infrastructures, the proliferation of means of transport by motorcycle taxis and the non-respect of the Traffic Laws.

4.2. Age and Sex

Cranio-encephalic trauma remains in our environment as elsewhere a pathology of young adults.

Our study shows that the predominant age group is that of 20 to 29 years with 32.6% of cases. Our results are close to those found by Kasongo. L. Samake at al. On the epidemio-clinical study of cranioencephalic trauma in the orthopedic and traumatological surgery department of the CHU Gabriel Touré in Bamako found 36.07% and 29.24% respectively [17, 20].

The age group of 20 to 29 years corresponds to the most active period of life, a period during which young subjects are often exposed to various traumas.

The male predominance is noted with 68.4%. Our result is roughly similar to that of Kasongo. L who in his study found 68.31% male [17]. But lower than that found by Moussa. D who found 79.78% male [13].

We only believe that the predominance of the male sex observed in our series as in others is due to the fact that men carry out more risky activities such as sports, motorcycle drivers and building work which expose them to various traumas, unlike women who take care of households and are less exposed. .

4.3. Occupation

In our study, students are the social groups most affected by cranio-encephalic trauma with 35.7% of cases. Our result is similar to those of Moussa D; Kamalu B and Kasongo L. who respectively found 31.15%, 37.8%, 39.05% [13, 17, 18].

We believe that this socio-professional category is made up of very mobile subjects who are more easily exposed to road traffic accidents than other patients.

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4.4 . Place of origin

In this series, the LIKANGO district is the most concerned place of origin of our patients with 38.8% of cases. This could be explained by the fact that the LIKANGO district is the mirror of the city, a commune of first rank on the administrative level, inhabited by the civil authorities as well as the big businessmen and the evolved of the city; recognizing the importance or the need for quality care on the one hand and on the other by the fact that the General Hospital of INERA YANGAMBI is located in the said city, thus giving easy access to the patients coming from this city.

4.5. Etiology of cranio-encephalic trauma

In our series, ATRs constituted the most dominant etiology with 70.4%. cases; this result is close to those of Moussa D, Kasongo L, Kamalu B, Mapuku Bekunkanga Jude, Hafida Bighouab with 66.48% respectively; 66.4%; 66.4%; 63.46% 62.26% [7, 13, 17, 18].

The high rate of road traffic accidents in our environment is explained by an increase in wheeled vehicles, the dilapidation of road infrastructure, non-compliance with the highway code, excessive speed.

4.6. Pathological anatomy

Our study shows that 64.3%. of our patients had abrasions. This observation is close to that reported by Kamalu B. Who had found 70% and higher than that of Kasongo L 55.19% [17, 18].

Cranio -encephalic trauma by direct shock is more frequent than trauma by indirect mechanism. The lesions of the container are always present, in particular that concerning the soft parts. It should also be noted that most of our patients were either pedestrians or motorcyclists without protective helmets.

4.7. Clinical signs on admission

In our study, the majority of our patients had a lucid conscience on admission representing 72.5% of cases. Our result is close to that of Kamalu B who had found 74.1% of cases and superior to that of Kasongo L who for his part had found 52.47% of cases [17,18].

This result could be explained by the very conditions of occurrence of these cranio-encephalic traumas most often due to accidents by rolling machines.

4.9. Radiological data

In our study, 95.9% of patients presented normal non-pathological radiological data. Our result is similar to that of Kamalu B in his study found 95% of non-pathological images. [18]

It should be noted that the examination of certainty in the event of cranio-encephalic trauma remains the scanner because of its undisputed precision of the lesions by oriented cuts. Unfortunately, our environment does not

have any, hence the use of standard radiography as the only means of exploration despite the severity of the anatomic-pathological lesions.

4.10. Evolution

Our study shows that 62.2% of our patients progressed to an improvement and 26.5% were cured after treatment.

We believe that the high rate in our study would be due to the benignity of the lesions found and to the staff of the surgery department, which is made up of competent and qualified nursing staff.

CONCLUSION

Our study focuses on the epidemiological and clinical profile of cranioencephalic trauma at the INERA YANGAMBI General Hospital , with the following objectives: to identify the epidemiological, clinical and therapeutic profile of cranioencephalic trauma at the INERA General Hospital. 'INERA YANGAMBI , to determine the prevalence of patients with cranio-encephalic trauma during the period of our study, to identify the different etiological circumstances as well as the treatment followed.

At the end of this study, we arrived at the following results:

- The prevalence of patients with cranio-encephalic trauma admitted to the General Hospital of INERA YANGAMBI was 44.5% during the period of our study;
- Most of our patients were male with 68.4%;
- The 20 to 29 age group was more affected;
- The students were more victims of cranio-encephalic trauma ;
- The LIKANGO district was the place of origin most concerned with 38.8%;
- Road traffic accidents are the main etiology of cranio-encephalic trauma with 70.4%. cases in our research setting;
- The abrasion was the most observed anatomic-pathological lesion with 64.3% ;
- The majority of our patients had a clear conscience on admission with 72.5%;
- The majority of patients, their evolution was marked by an improvement with 62.2% ;

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