Research Article

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Profile of Motorcycle Accident Victims in the Neurosurgery Department at the Sino-Guinean Friendship Hospital of Kipe

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ABSTRACT

Summary: *Road traffic accidents are one of the leading causes of death in the world [1]. Many cases are preventable by controlling human factors, which are often involved. Increasingly numerous on the roads, motorcyclists are particularly vulnerable with potentially disabling or fatal injuries, which can affect all parts of the body, especially the cephalic extremity and the spine.*

The Neurosurgery department of HASIGUI is one of the primary destinations for RTA victims involving motorcycles. From the daily observation of the department's activities, it appears that victims of motorcycle accidents are becoming increasingly numerous in practice. We can then ask the question about the frequency and nature of the types of injuries from RTAs involving motorcycles in this neurosurgery department of the Sino-Guinean Friendship Hospital of Kipé.

The objective was to determine the socio-clinical characteristics of accident victims involving motorcycles taken care of in the Neurosurgery department of Kipé.

Materials and methods: *This was a retrospective descriptive study over a period of 6 years (January 2015 – December 2020).*

Results: *Out of a total of 560 RTA cases, we collected 230 cases due to two-wheeled vehicles (41%). The average age of the patients was 34 years with extremes of 02 years and 110 years, the age group of 16 to 30 years was the most affected (40%). We noted a male predominance of 65% of cases. Nearly ¾ (70%) of the victims practiced a liberal profession and 46% were driving at the time of the accident. We recorded a predominance of daytime accidents (94%). The motorcycle-pedestrian collision was the most frequent (51%); the initial loss of consciousness was the most common reason for hospitalization. 61% of patients had a Glasgow score ≥13; 81% of patients had a cranioencephalic trauma. 12.60% benefited from surgical treatment and 0.86% from orthopedic treatment.*

Conclusion: *Motorcycle neurotrauma is frequent in the neurosurgery department of the Sino-Guinean Friendship Hospital of Kipé with serious and very costly sequelae.*

Keywords: *Accidents, motorcycle, neurotrauma, Sino-Guinean Friendship Hospital, Kipé.*

Introduction

Traumas due to road traffic accidents represent the 8th cause of death in the world and the first cause of death in young people aged 15 to 29 years [3]. If all road users are at risk of being injured or killed on the roads, there are differences in mortality rates depending on the categories of users. Thus pedestrians, cyclists or users of two-wheeled motorized vehicles are generally more vulnerable than motorists [4,5]. Motorcycle road accidents pose a global public health problem, especially with the advent of motorcycle taxis [6-8]. When they are not fatal, these accidents sometimes lead to serious disabilities that often pose problems of socio-professional reintegration of patients [6,9,10].

I- Material and Methods

This was a mixed descriptive study over a period of 6 years from January 1, 2015 to December 31, 2020.

It concerned all the records of patients who were victims of road traffic accidents admitted and followed up in the department during our study period.

Included were all the records of patients who were victims of motorcycle accidents admitted and followed up in the department during our period.

For each patient, we considered the socio-epidemiological, diagnostic and therapeutic aspects.

II- Results

During the study period, out of a total of 560 records, we collected 230 records of patients involving motorcycles, which is a frequency of 41%.

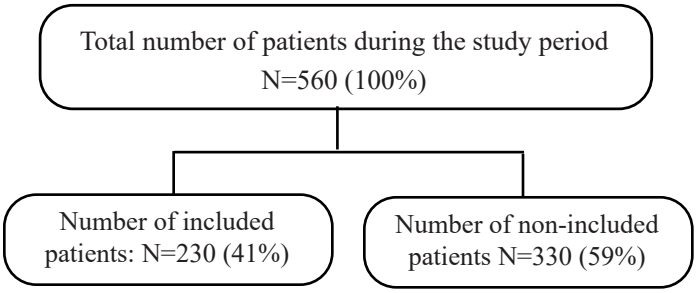

Figure 1. *The frequency of patients included in the study.*

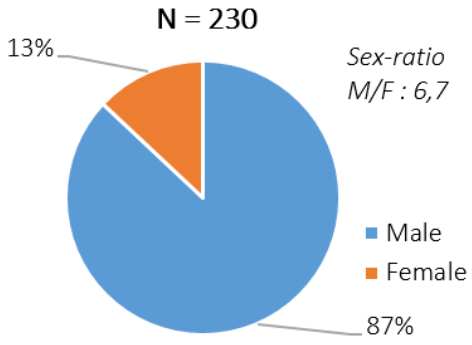

Figure 2. *Distribution of patients by gender.*

Table I. Distribution according to the age groups of patients.

Age range	Staff	Percentage
0 – 15	26	11
16 -30	92	40
31 – 45	66	29
46 -60	17	07
61 -75	23	10
75>	06	3
Total	**230**	**100**

Average age = 34 years ± 19; Extremes: 2 and 110 years

Table II. Distribution of patients by occupation.

Profession	Staff	Percentage
Professional	162	70
Student	52	23
Housewife	11	5
Administrators	05	2
Total	**230**	**100**

Table III. Distribution of patients according to their position in relation to the machine.

Victim Status	Staff	Percentage
Drivers	105	46
Pedestrian	103	45
Passenger	22	09
Total	**230**	**100**

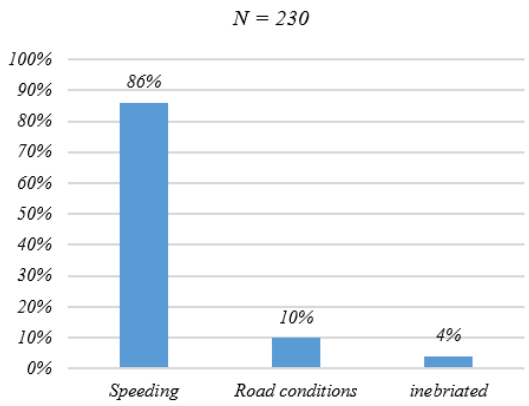

Figure 3. *Distribution of patients by risk factors.*

Table IV. Frequency of Hard Hat Use.

Wearing a helmet	Staff	Percentage
Not	206	90
Yes	24	10
Total	**230**	**100**

Table V. Distribution of patients according to circumstances of occurrence.

Circumstance of occurrence	Staff	Percentage
Motorcycle-pedestrian collision	117	51
Motorcycle-car collision	60	26
Motorcycle crash	33	14
Collision-like	20	9
Total	**230**	**100**

Table VI. Distribution by level of education.

Level of education	Staff	Percentage
Not in school	90	39
Primary	30	13
Secondary	54	23
Upper	56	24
Total	**230**	**100**

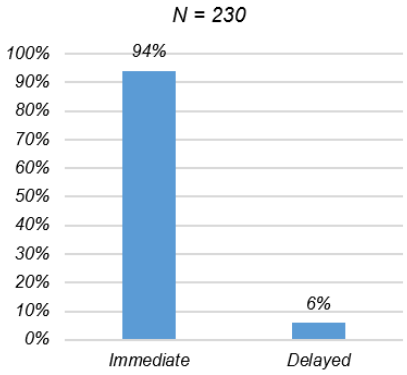

Figure 4. *Distribution of patients by initial loss of consciousness.*

Table VII. Distribution of patients by reason for hospitalization.

Reasons for hospitalization	**Staff**	**Percentage**
Concept of initial loss of consciousness	146	63,47
Disorder of consciousness	79	34,34
Functional impotence of limbs	72	31,30
Headache	70	30,43
Psychomotor agitations	68	29,50
Spinal pain	50	21,73
Vomit	40	17,40
Notion of otorrhagia	26	11,30
Language disorder	16	6,95
Eyelid edema	13	5,65
Notion of epistaxis	11	4,78
Eyelid bruising	10	4,34
Rhinorrhea	5	2,17
Facial paralysis	5	2,17
Sensory disorder	3	1,3
Dizziness	3	1,3
Scalp wound	2	0,8

Table VIII. Distribution of patients according to the Glasgow Score.

Glasgow score 15/15	**Staff**	**Percentage**
≥13	115	61
9 to 12	65	34
≤8	9	5

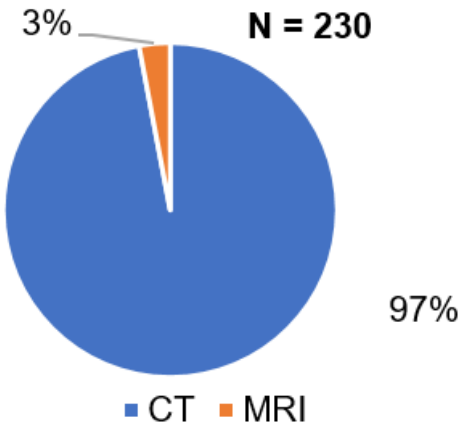

Figure 5. *Distribution by type of imaging performed.*

Table IX. Distribution of patients by type of trauma.

Type of trauma	**Staff**	**Percentage**
TBI	189	81
VMT	41	17
Mixed	4	2

Table X. Distribution of patients by CT diagnosis.
(Skull: n = 66 patients; spine: n = 17 patients)

Diagnostic	**Staff**	**Percentage**
Skull : n=66		
Oedematous and haemorrhagic contusion	20	31,25
Skull fracture	20	31,25
Extradural hematoma	15	23,43
Subdural hematoma	6	9,37
Hematoma under scalp	3	4,7
Subarachnoid hemorrhage	2	3,12
Spine: n=17		
Vertebral fracture	10	59
Vertebral dislocation	7	41

Table XI. Distribution of patients according to the degree of spinal cord involvement of Fränkel's grading, (N= 45).

Grading de Fränkel	Staff	Percentage
A	26	58
B	12	27
C	5	11
D	2	4

Table XII. Frequency of associated injuries.

Associated lesions	Staff	Percentage
Clavicle fracture	7	3,04
Leg fracture	5	2,17
Fracture of the femur	1	0,4
Fracture of the humerus	3	1,3
Mandibular fracture	3	1,3
Fracture of the clean bone of the nose	1	0,4
Shoulder dislocation	1	0,4

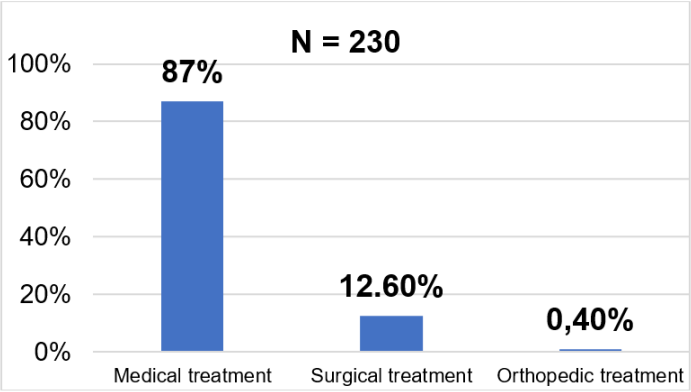

Figure 6. *Distribution of patients by treatment option.*

Table XIII: Distribution of patients by prognosis.

Prognosis	Staff	Percentage
Good	182	79
Bad	48	20
Total	**230**	**100**

We conducted a retrospective descriptive study over a period of 6 years, the aim of which was to describe the profile of motorcycle accident victims in the neurosurgery department of the Friendship Hospital of Kipe. The retrospective nature and the unexploitable records constituted limitations to this study.

During our study period, we collected 560 cases of RTA, including 230 cases due to two-wheeled vehicles, i.e. a frequency of 41%. This result is lower than that of Christian C. et al. [8] who reported a frequency of 54% in Nigeria in 2011, Almeimoune et al. [9] in Mali, reported a frequency of 69.08% in 2017 while in Guinea, Bah ML.et Coll. [10] found 64% of cases linked to two-wheeled vehicles. These differences in proportions could be explained by the difference in size of the samples and study period which were not the same.

The patients were relatively young (average age = 34 years). This result is consistent with that of Franklin D. [11] who, in his doctoral thesis in medicine, found an average age of 28.5 years.

This result can be justified, on the one hand, by the predominantly young age of the population, and on the other hand, the young people represent the fringe most concerned by risky behaviors in road traffic. Also, the advent of two-wheeled vehicles has given rise to certain income-generating activities, including taxi-motorcycle driving, which is essentially practiced by young people, without any prior training in road traffic.

We noted a male predominance with a sex ratio (M/F) of 6.7. In Mali in 2017, Almeimoune et al. [9] also found a male predominance, even if the sex ratio (M/F) of 2.03 was lower.

This difference in ratio could be related to the fact that, in our context, the driving of two-wheeled vehicles is tacitly reserved for young boys.

The drivers represented the majority of the victims (46%). This rate is similar to that of Thomas M. et al. [5] who reported that the patients were drivers in 56.6% of cases in Senegal in 2015.

This result could be due to the fact that drivers are much more reckless when they are alone on motorcycles.

Motorcycle-pedestrian collisions were the most common mechanism of occurrence in our study (51%), followed by Motorcycle-Car Collisions (26%). Our results are higher than those of Krah K.et al. [12] in 2012 who reported a rate of 23.3% of motorcycle accidents against pedestrians.

This high frequency could be explained by the lack of amenities reserved for pedestrians such as sidewalks and footbridges.

The notion of initial loss of consciousness was the most common reason for hospitalization (63.47%), followed by disorders of consciousness and Headaches.

Our results are similar to those of Kankou K. [13] who reported 81.0% Headaches followed by 74.0% of vertigo.

This could be justified by the fact that the initial loss of consciousness constitutes a transient but typical symptom encountered in cases of cranial trauma; the symptomatic variety could be explained by the diversity of circumstances and mechanisms of occurrence of traumas.

The majority of our patients (61%) were admitted with mild cranial trauma while 34% of them presented mild cranial trauma and 5% severe cranial trauma.

These results are different from those of Motah et Coll. [14] in 2012 in Cameroon who reported 67.9% mild CT; 8.67% moderate CT and 23.43% severe CT.

This difference could be explained by the difference in the study population but also by the fact that the assessment of the Glasgow scale is examiner dependent.

We noted that 81% of the victims presented a cranioencephalic trauma, 17% of vertebro-medullary trauma and 2% of mixed trauma. Our results are similar to those of Beavogui K. et al. [15] who reported 82% of cranioencephalic trauma, 8.9% of vertebro-medullary trauma and 9.1% of mixed trauma in Guinea in 2012.

This high frequency of cranioencephalic trauma, could be explained by the anatomical arrangement of the head which is more exposed compared to other parts of the body when one is already on a motorcycle. To this is added the non-use of protective equipment such as a safety helmet; as evidenced by our results where only 10% of the victims were wearing a helmet at the time of the accident.

Our patients had a CT scan at a rate of 97% while only 3% of the victims had an MRI. Our results are higher than those of Joseph S B. et al. [16] who reported that 20% of patients had CT scan versus 0.71% of MRI in Madagascar in 2017. These results could be explained by the contribution of CT scan in the management of patients in neurosurgery but also its availability at the Friendship Hospital of Sino-Guinean of Kipe.

Vertebral fractures (59%) and vertebral dislocations (41%) were the main diagnoses retained according to imaging data, notably CT scan. They were followed by contusions (30.30%) then skull fractures (30.30%). These results are similar to those of Thierry A. et al. [17] who, in 2020 in Benin, found 61.53% of vertebral fracture, 61.53% of cerebral contusion, 57.69% skull fracture and 46.15% vertebral dislocation.

This concordance could be explained by the fact that the circumstances of occurrence as well as the mechanism of accidents due to two-wheeled vehicles are similar whatever the study population.

The prognosis was good in the majority of our patients (79.13%) while only 20.86% had a poor prognosis.
Our results are superimposable on those reported by CAMARA IF. [18]; which recorded 46.88% of cases of recovery; and 43.93% of cases of improvement on discharge.

Conclusion

At the end of this study, it emerges that motorcycle accidents are very frequent in Guinea. This frequency is observed much more in young taxi-motorcycle drivers due to speeding, leading to a collision between a motorcycle and a pedestrian or between two motorcycles.

The notion of initial loss of consciousness, disorders of consciousness, functional impotence of the limbs and headaches were the main clinical signs; hence the importance of carrying out paraclinical examinations to highlight cerebral suffering and/or associated lesions.

Medical treatment was the most used therapeutic option followed by surgical treatment in certain patients.

Thus road (motorcycle) accidents represent a real public health problem and cause considerable economic losses for the victims, their families and the country as a whole. These losses come from the cost of treatments and the losses of productivity for those who die or remain handicapped following their injuries, as well as for the members of the families who must interrupt their work or their schooling to take care of the injured.

Traumas due to traffic accidents are the eighth leading cause of death for all age groups, now causing more victims than HIV/AIDS, tuberculosis or diarrheal diseases. These traumas are currently the leading cause of death in children and young adults. Hence the need to put in place a control system for taxi-motorcycle drivers, in order to reduce the frequency of motorcycle accidents.

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