

Socio-Demographic Profile of Adults Admitted in Emergency for Brain Trauma Injuries at the University Hospital of Brazzaville (Congo)

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Abstract

The aim of this study was to evaluate socio-demographic profile of adults admitted in emergency for Traumatic Brain Injury (TBI) at the University Hospital of Brazzaville in the Republic of Congo. We performed a prospective study within a period of six months, into the surgical unit of the emergency department of the University Hospital of Brazzaville. A total of 2617 patients were recorded, among which 268 cases were TBI (10.25%) where 142 cases were sampled in our series. The average age was 36.7 ± 16.6 years. The sex ratio was 6.1. The TBI was mainly due to road accident in 121 cases (85.2%) described as follows: motorcycle accident about 48 cases (39.7%) and the pedestrian's injuries about 42 (34.8%). In the majority of the cases, cautions were not taken by the drivers; during the case of the motorcycle accident, about 97.9% of the riders did not wear a helmet. The TBI remains a growing public health concern in the low-income countries, like in Africa. Measurements on the road traffic regulation are to be strengthened to reduce the growth of this silent epidemic.

Keywords

Traumatic Brain Injury, Road Accident, Brazzaville

1. Introduction

Traumatic brain injury (TBI) is often referred to as the “silent epidemic” and

remains a growing public health concern. It is considered as the greatest contributor to death and disability among all trauma-related injuries [1] [2]. The global incidence of all-cause and severity TBI is estimated at 939 cases per 100,000 people and it is estimated that 69.0 million people worldwide will suffer TBI each year. The vast majority will be mild (81%) and moderate (11%) in severity [3].

The epidemiological estimate of TBI from low and middle-income countries like in Africa is limited by relatively low-quality data and suggests the need of more robust and accurate injury reporting [3]. Sub-Saharan Africa demonstrates a higher head injury related incidence rate varying from 150 to 170 per 100,000 respectively due to motor vehicular crashes compared to a global rate of 106 per 100,000 [4]. Road traffic collisions are a significant source of TBI [5]. While guidelines have been established for the care of patients with severe head injury, these protocols require some of the most expensive resources of a high-income country, such as CT imaging and neurosurgical capabilities. Even the World Health Organization (WHO) recommendations for the Essentials of trauma care recognize that it is unlikely that low- or middle-income countries will be able to meet these guidelines fully. Low income nations can focus on implementing pre-hospital care training [6]. In the Republic of Congo, hospitalization frequency is estimated at 39.95%, with the average age of 31.26 years old and mortality of 10% [7].

The aim of this study was to evaluate the socio-demographic profile of adults admitted in emergency for TBI at the University Hospital of Brazzaville in order to improve our knowledge about TBI circumstances in the sub-Saharan countries.

2. Material and Methods

We performed a descriptive and prospective study, within a period from 30th November 2017 to 30th May 2018 (six months) into the surgical unit of emergency department of the University Hospital of Brazzaville who is the national reference center for management of neurosurgical diseases. We selected among all patients admitted in the department of emergency, cases from 18 years old and more hospitalized for TBI. We excluded cases of subdural hematoma and death at arrival. The parameters evaluated were age, sex, origin and traumatic circumstances. The circumstances of the trauma were defined by the event in question, position of the patient (motorcyclist, driver or passenger in a car, pedestrian) and the type of collision (example: motorcyclist versus pedestrian). The interrogation was conducted with the patient or his entourage. After clinical examination, the data were recorded during the continuation of management. Collection of data was performed from hospital register, medical file and fact sheet prepared for codification, and treated in Excel 14.2.0 (120402).

3. Results

During the period of study, 2617 patients were recorded in the surgical unit of the emergency department of the University Hospital of Brazzaville. Among

these 2617 cases, 268 (adults and children) were admitted for TBI (10.25%) and 142 were included in our series (5.42%). The other cases were children (106 cases), subdural hematoma (11 cases) and death at arrival (9 cases).

Table 1 below indicates ages of patients. The average age was 36.7 ± 16.6 years, with extremes between 18 and 82 years. We recorded 122 men against 20 women with a sex ratio of 6.1.

The majority of the patients: 90 cases (63.4%) have a secondary level of school instruction; 29 cases (20.4%) have a primary level; 20 cases have university level and at last three cases (2.1%) with no educational background.

Table 2 below indicates professions of patients.

In our series, TBI were due to road accident in 121 cases (85.2%), followed by assaults (9.9%), falls (4.2%) and sport accident (0.7%). **Table 3** below indicates collision circumstances during road accident. Among cases of road accident, 48 patients were riders (39.7%), followed by 42 pedestrians (34.8%), 22 car passengers (18.1%) and nine car drivers (7.4%). In the group of riders (48 cases), 47 cases did not wear a helmet (97.9%). In the group of 31 patients in the car (passengers or drivers), only eight cases (25.8%) wore a seatbelt. Among 121 cases of road accident, only 68 vehicles (56.2%) had insurance and two patients (1.4%) had health insurance. Only one patient received medical transport, but no neck brace.

Table 1. Age of patients.

	n	%
18 - 24	28	19.7
25 - 34	54	38.0
35 - 44	23	16.2
45 - 54	20	14.1
≥ 55	17	12.0
Total	142	100

Table 2. Professional status of patients.

	n	%
Informal activity	69	48.6
Students	31	21.8
Private employed	9	6.3
Fonctionary	15	10.6
Without	18	12.7
Total	142	100

Table 3. Collisions circumstances during road accident.

	n	%
Motorbike versus car	34	28.1
Car versus pedestrian	34	28.1
Motorbike versus pedestrian	17	14.0
Motorbike alone	14	11.6
Car alone	13	10.7
Motorbike versus Motorbike	5	4.2
Car versus car	4	3.3
Total	121	100

4. Discussion

The aim of this study was to first of all appreciate the type of patients admitted in emergency for TBI in Republic of Congo. The study actually revealed how improving road traffic regulations can heavily prevent TBI cases related to road accident. However, this study can be improved by elaborating a “National Register of TBI” in order to see whether the actual TBI profile can be extended in the entire country.

Hospitalization frequency of TBI in our series was 10.25%. Between 2014 and 2015, we found a frequency of 31.17% [8]. Despite a considerable reduction, improvements are still to be done compared to similar studies performed elsewhere. In this series, frequency integrates all adult patients admitted in the emergency department within the period of study so the case of the study performed on patients admitted in the surgery department in Cameroun (Central Africa) Motah *et al.* [9] where the hospitalization frequency was 5.15% and in Mali (West Africa) Coulibaly *et al.* [10] where the hospitalization frequency was 5.9%. From a projection model, the potential future burden of TBI in Africa will be the highest in eastern and western Africa for men aged between 15 and 34 years. TBI will be a leading cause of morbidity and mortality globally by the year 2020, particularly in low- and middle-income countries; Africa possesses 4% of motor vehicles in the world but already one-tenth of deaths are caused by motor-vehicular injuries [11] [12]. The total estimated TBI count in Africa in 2050 is 5.98 ± 0.03 million, with the highest count in eastern Africa at 0.15 ± 0.00 million [12].

Most of patients in our series have 18 to 34 years old. However, the group between 25 to 34 years old was the most important. Average age was 36.7 ± 16.6 years, with extremes between 18 and 82 years. We didn't included children in our study. Motah *et al.* [9] found an average of 28.33 years old and 54.32% between 30 and 57 years old. TBI counts stratified by age in Africa in 2050 are also estimated highest for males aged 15 - 34 [12]. TBI are major cause of morbidity and mortality in young adults [13].

Sex ratio in our study was 6.1. The gender ratio ranged considerably, from

1.81:1 in South East Finland to 4.81:1 in South Africa [14]. Mind Li *et al.* [14] found in a systematic review that the men were at a higher risk of TBI than women. Kraus *et al.* [15] found that the mortality rate of women compared to men suffering from TBI was 1.28 times higher on average.

In our series, TBI were due to road accident in 121 cases (85.2%). Main authors report that road accident is the most frequent cause of TBI [12]. Riders (39.7%) and pedestrians (34.8%) were the most frequent among victims of TBI in our series. Motah *et al.* [9] found 74.07% of patients using bicycles. Urbanization in Africa will increase the rate of TBI by road accident. In a study performed in Kenya, comparing values from 2004 to 2009, there was an increase in motorcyclist road traffic injury (29%) and overall fatalities (7%) within that 5-year timeframe [16]. This frequency indicates the necessity to improve regulation on road traffic in our countries. In the group of riders 97.9% do not wear a helmet. In the group of patients in the car (passengers or drivers), only 25.8% wore a seatbelt.

5. Conclusion

TBI represents an important part of patients admitted in emergency in the university hospital of Brazzaville (10.25%) in the Republic of Congo. Most of them are due to road accident (85.2%) and mainly concern young male people. Predicting data estimates increasing of TBI in Africa in 2050 and thereabout. Measurements on the road traffic regulation are to be strengthened to reduce the growth of this silent epidemic.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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