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Epidemioclinical Aspects of Childhood Domestic Accidents in the Emergency Department of Boffa Hospital

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Abstract

Introduction: Domestic accidents are defined as accidents that occur in the home or its immediate surroundings. **Objective:** To describe the epidemioclinical and therapeutic aspects. **Patients and Methods:** Prospective, descriptive study from July 1, 2019 to June 30, 2020 in the emergency department of Boffa prefectural hospital included all children aged 0 to 15 years admitted for domestic accidents. **Results:** Of 120 cases of accidental trauma, 56 were domestic accidents. The mean age was 7.08 years. The 0 - 5 and 11 - 15 age groups were the most represented (35.71%). The sex ratio was 1.55 in favor of boys. Domestic accidents were represented by falls (26.78%), thermal burns (21.43%), snakebite wounds (17.86%) and dog bites (10.71%), drowning (5.36%), and electrification by lightning (3.60%), one case or 1.78% of each of the following: esophageal foreign body by palm nut, firearm, wall collapse, stretching of upper limb. Paracetamol was the molecule most frequently used (89.28%). The outcome was favorable in 92.86% of cases. However, four (4) deaths were recorded. **Conclusion:** Domestic accidents remain a significant pathology at Boffa prefectural hospital.

Keywords

Domestic Accidents, Children, Hospital, Prefecture, Boffa, Guinea, Conakry

1. Introduction

Domestic accidents are defined as accidents that occur at home or in its imme-

diate surroundings [1]. Accidental injuries are divided into two groups: intentional injuries (suicides, suicide attempts, assaults and violence, acts of war) and unintentional or accidental injuries including traffic accidents, work-related accidents, or accidents in daily life (domestic accidents, school or sports accidents) [2].

Injuries in children are now a major public health problem worldwide [3], and are even responsible for around 950,000 deaths per year, with 90% of them being due to accidental injuries [4]. They remain a leading cause of mortality and poor health in children in low- and middle-income countries [5]. In Africa, the rate of accidental injuries was 53.1 per 100,000 children in 2004 [4]. Domestic accidents cause more deaths each year than road and occupational accidents combined [6]. In the African context, dominated by infectious diseases and nutritional deficiencies, accidental injuries remain a significant problem, but unfortunately, there is little documentation on this topic [7].

In Guinea, studies have been conducted on accidental injuries in a hospital setting, but none of them have been exclusively dedicated to children [8] [9]. However, accidental injuries in children are recorded throughout the country. At the emergency department of the Boffa Prefectural Hospital, we noticed an increase in cases of domestic accidents in the consultation registers, which prompted our study, aiming to draw attention of our authorities to this issue, just as they have done for infectious and parasitic diseases in children. Our objectives were to describe the epidemioclinical and therapeutic aspects.

2. Patients and Method

This was a prospective, descriptive study conducted at the emergency department of the Boffa Prefectural Hospital over a one-year period from July 1, 2019, to June 30, 2020. Our study population included all children aged 0 to 15 years admitted for accidental trauma, and only those admitted for domestic accidents that the technical platform was capable of handling were included in the study. We completed a survey form tailored to our study, and recruited all patients by means of parent questionnaires.

The parameters collected and analyzed included epidemiological factors (age, sex), clinical information (mechanism of the accident, traumatic injuries, causes of death), and outcomes. Our data were processed using Epi-info software version 7.0, and inputted using Word and Excel software from the Office 2016 package.

The Boffa Prefecture is located 150 km from Conakry. Its population was estimated at 237.339 inhabitants in 2020, and it is divided between the Urban Commune and its 7 Rural Communes: Douprou, Colia, Tougnifily, Mankountan, Lisso, Tamita, and Koba. The main activities of the population include fishing, agriculture, and livestock farming.

The prefectural hospital is the reference center in this locality. It is powered by the local power supply from Electricité de Guinée from 6 PM to midnight, every

day, and when necessary, a generator takes over. This hospital has an imaging unit that was not functional due to equipment and the lack of a radiologist, as well as an intensive care unit that only operated with 2 oxygen extractors, an electric aspirator, and a pulse oximeter. In terms of healthcare personnel, the hospital has no general practitioners, nurses, midwives or technical health staff.

In this series, we considered the following definitions:

- Accidental injury: Any unintentional bodily harm.
- Lightning electrocution: The phenomenon of being struck by lightning without resulting in death.

Ethical considerations: This study obtained verbal consent from the parents of the patients, guaranteeing anonymity and without any coercion.

3. Result

During the study period, 120 patients were victims of accidental injuries, of which 56 cases were domestic accidents, accounting for 46.67%.

The average age was 7.08 years. The age groups of 0 to 5 years and 11 to 15 years were the most represented, with 20 cases each, accounting for 35.71%. The sex ratio was 1.55 in favor of boys (Table 1). Domestic accidents were represented by falls (26.78%), thermal burns (21.43%), snake bites (17.86%), dog bites (10.71%), drowning (5.36%), and lightning electrocution (3.60%). There were also 1.78% of each of the following cases: esophageal foreign body caused by palm nut (Figure 1, Figure 2), firearm injury, wall collapse, and upper limb stretching (Table 2). Wounds ranked first among traumatic injuries (42.86%), followed by contusions (32.14%), fractures (23.21%), traumatic brain injury without loss of consciousness (8.93%), and brachial plexus paralysis (1.78%) (Table 3).

Paracetamol was the most commonly used drug (89.28%) (Table 4). The prognosis was favorable in 92.86% of the cases. However, four deaths were recorded (Table 5). Firearm injuries, thermal burns, snake bites, and drowning were the causes of death in this study (Table 6). The technical platform for accident management in this hospital is poor. This made it difficult to treat certain patients. All cases beyond the scope of our facility were referred to national hospitals in Conakry (the capital of Guinea) and were not included in our study.

Table 1. Distribution of the 56 patients according to epidemiological characteristics.

Epidemiological characteristics	Effective (N = 56)	Pourcentage
Age		
0 - 5 year	20	35.71
6 - 10 years	16	28.57
11 - 15 years	20	35.71
Sex		
Male	34	60.71
Female	22	39.29

Average age: 7.08 years; Extreme: 7 weeks - 15 years; Sex ratio: 1.55.

Figure 1. A 5-month-old boy with a depressed fracture on May 15, 2020. He was with his mother picking mangoes when a mango fell on his head while he was breastfeeding in his mother's arms under a mango tree.

Figure 2. A 6-month-old boy who attempted to swallow a palm nut, which became lodged in his esophagus, causing respiratory distress with depression of the xiphoid process, agitation, and oxygen saturation of 36%.

Table 2. Distribution of the 56 patients according to the mechanism of the domestic accident.

Mechanism of the accident	Effective	Pourcentage
Fall	15	26.78
Thermal burn	12	21.43
Snake bite	10	17.86
Dog bite	6	10.71
Sharp objects	4	7.14
Drowning	3	5.36
Electrocution by lightning	2	3.60
Firearm injury	1	1.78
Wall collapse	1	1.78
Upper limb stretching	1	1.78
Foreign body*	1	1.78
Total	**56**	**100**

Foreign body*: It was a palm nut that was wedged in the throat of a 6-month-old infant (**Figure 2**).

Table 3. Frequency of traumatic injuries in the 56 patients who were victims of domestic accidents.

Traumatic injuries	Effective	Pourcentage
Wounds	24	42.86
Contusion	18	32.14
Fracture	13	23.21
Head trauma without loss of consciousness	5	8.93
Brachial plexus paralysis	1	1.78

Table 4. Frequency of therapeutic means used in the 56 patients victims of domestic accidents.

Therapy used	Effective	Pourcentage
Paracetamol	50	89.28
Antibiotics	36	64.28
Anti-inflammatories	31	55.36
0.9% Saline Solution	27	48.21
Dressing	24	42.86
Ringer's Lactate	23	41.07
Casting	11	19.64
Oxygenation	8	14.28
Diazepam	1	1.78

Table 5. Répartition des 56 patients victimes d'accidents domestiques selon l'évolution.

Evolution	Effective	Pourcentage
Favorable	52	92.86
Death	4	7.14
Total	**56**	**100**

Table 6. Distribution of the 4 cases of death according to cause.

Cause of death	Effective	Pourcentage
Firearm injury	1	25
Thermal burn	1	25
Drowning	1	25
Snake bite	1	25
Total	**4**	**100**

4. Discussion

The hospital's poor technical facilities for accident management, the scarcity of electrical power and the lack of a pediatric surgeon were the main difficulties,

while the lack of imaging and radiology facilities was the main limitation of this study. The age groups of 0 to 5 years and 11 to 15 years were the most represented with 20 cases each, accounting for 35.71% of the cases. In the literature, there is a high risk of domestic accidents in the age group of 0 to 5 years according to studies [10] [11] [12]. These data can be explained by the fact that after 2 years and before 6 years, children exhibit a certain autonomy in their movements associated with motor incoordination and a desire to explore the world [11]; after the age of one year, children start walking, which allows them to discover the world and escape their parents' supervision [13]. We found a predominance of males in our study, which is similar to other studies [11] [12] [14] [15] [16]. This could be explained by the fact that boys are generally more restless, aggressive, and oppositional than girls.

The top domestic accidents in our study were falls (26.78%), thermal burns (21.43%), snake bites (17.86%), dog bites (10.71%), drowning (5.36%), and lightning electrocutions (3.60%). The main classic domestic accidents described in the literature are burns, foreign bodies, intoxications, falls, and drownings [17] [18]. However, the types of domestic accidents are correlated with the localities, lifestyles, and behavior of the populations in which the studies were conducted. In Mohamed A.S *et al.*'s study, these domestic accidents were represented by falls, burns, intoxications, crush injuries, collisions, and foreign bodies [19]; while in Morocco, Mostafa R *et al.* reported burns, intoxications, foreign bodies, falls, and drownings in descending order [20]. Boffa prefecture is surrounded by a large forest and the sea. This means that snakes surprise some families on their premises and even some patients in their hospital rooms. Rainfall in Boffa is frequently accompanied by severe thunderstorms with lightning strikes. Two girls in our study, in the rain just outside their home, were electrocuted by lightning; one had a phone in her bag. The risk of collective lightning strikes is described in the literature [21], but the danger of phones during lightning strikes is still debated in some studies [22] [23]. Out of 231 cases of domestic accidents, Ines M. *et al.* found 1 case of electrocution by electric current, accounting for 0.43% [24]. Lightning strike is an electrical accident involving the passage of lightning current through a person's or an animal's body [25].

Paracetamol was the most commonly used molecule (89.28%). Eight (8) patients, accounting for 14.28%, received oxygenation. Among these 8 patients was a 6-month-old infant referred from a sub-prefecture in Boffa (Mankountan) with a palm nut in the esophagus; he presented with severe respiratory distress and oxygen saturation of 36%. We provided oxygenation and his saturation improved to 100%. He was then referred to the ENT department at Donka National Hospital where he was saved. The majority of cases, 52 out of 56 (92.86%), showed favorable progress. However, four (4) deaths were recorded, which were caused by burns, gunshot, drowning, and snakebite. In a worldwide report on childhood injury prevention, the WHO published the following causes of death: drowning (16.8%), burns (9.1%), falls (4.2%) [4].

5. Conclusion

Domestic accidents remain a significant issue at the Boffa Prefectural Hospital. They are silent killers of children that deserve attention from our healthcare system. There are indeed possibilities for prevention, especially through campaigns to raise awareness among parents of children. Improved technical facilities and power supply, as well as the arrival of doctors specializing in pediatric surgery and radiology, will be decisive factors in improving care for children in this hospital. We believe that this study will be a valuable tool in taking a stance against this scourge.

Conflicts of Interest

The authors declare no conflict of interest.

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