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Prevalence of Ocular Trauma at the Reference Health Center (CSREF) of Kati

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Abstract

Introduction: The authors wanted to study the prevalence of ocular trauma in the ophthalmology unit of the CSREF of Kati. **Patients and method**: This is a retrospective study, covering the period from January to December 2015, carried out in the ophthalmology unit of the CSREF in Kati. **Results**: The sample consisted of 568 patients, or 6.82% of ophthalmological consultations. Children aged 0 to 14 years accounted for 154 (27.11%) of the trauma cases. Bruises constitute the main circumstance (58.1%) of eye trauma, followed by domestic accidents (15.6%). Closed globe ocular trauma was the main type of trauma (61.6%), followed by ocular adnexal trauma (30.1%) and open globe trauma (8.3%) in which the penetrating wound was the lesion, the least common (2.6%) but the most serious. Medical treatment was the most used therapeutic modality in 82.4% of cases, followed by surgery with 17.6% of cases. The evolution of the lesions after treatment was favorable in 85.6% of cases and unfavorable in 14.4% of cases. Complications were observed in 5.8% of cases and sequelae in 8.6% of cases. **Conclusion**: Ocular trauma constitutes an important reason for ophthalmological consultation at the CSREF of Kati. The severity of some of these lesions requires frequent recourse to surgery. The complexity of the treatment should encourage us to favor preventive measures.

Keywords

Eye Trauma, Prevalence, CSREF Kati

1. Introduction

Eye trauma includes all damage caused to the eyeball and its appendages by direct contact with the following objects: blunt objects, sharp objects, hot objects, sharp objects, chemical substances, electrical sources, UV radiation, X-rays, microwaves [1] [2].

Their severity varies depending on the nature of the lesions. Worldwide, approximately 55 million eye injuries occur each year [3]. In the United States, it is estimated that up to 2.4 million eye injuries occur each year [4]. In Australia approximately 45,400 eye injuries occur each month [3]. In Italy the overall annual incidence of open eye injuries in northern Sardinia was 3.2 (6.3 for men, 0.3 for women) per 100,000 inhabitants from 1993 to 2004 [4].

They represent a significant cause of low vision or eyeball loss and constitute a public health problem [5].

Their role as a cause of vision loss is often underestimated. It is estimated that more than 1.5 million people worldwide become blind as a result of trauma [6]. According to the World Health Organization (WHO), in 1998, in the most developed countries, there were almost 1.6 million blind people worldwide, due to eye injuries. About 2.3 million people have been diagnosed with low vision, and nearly 1.9 million people with monocular blindness or low vision have suffered eye trauma. [7]

Several studies have been carried out in Africa on ocular trauma in children and adults with a frequency of 9.31% of childhood trauma and 30.92% of all ocular trauma according to LAMA in Guinea. [8] and 38.5% according to LAM in Senegal [9] and in Mali in Bamako more precisely at IOTA with a frequency of 4.80% during the COVID period according to Sissoko (3 = 5) and 22.46% in emergency consultation according to BAKAYOKO [10].

To date there has been no study concerning the situation of ocular trauma at the CSREF of Kati, hence the interest of this study which aims to determine the frequency of ocular trauma at the CSREF of Kati.

2. Patients and Methods

This is a retrospective study covering a period of 1 year (January to December 2015), in the ophthalmology department of the Reference Health Center (CSREF) of Kati. The Kati CSREF is the reference center for the Kati health district, which is one of the 10 districts in the Koulikoro region.

All topics received at the service for eye trauma (old and new cases) with a well-completed medical record during the study period were included.

A data collection sheet was informed to collect information from the medical file or consultation register.

The variables studied were epidemiological (age and sex, circumstances and type of trauma, traumatic agent), clinical, therapeutic and progressive. Traumas were classified.

According to the BETT classification into two groups: closed eye trauma

(TOGF) including contusion, lamellar laceration or superficial foreign body and open eye trauma (TOGO) which consists of penetration, rupture, laceration, perforation or intraocular foreign body.

The collected data were entered and analyzed using SPSS 20 Statistical software. Word processing was carried out on Microsoft Word 2016.

3. Results

We collected 568 cases of trauma out of 8320 consultations carried out, *i.e.* a frequency of 6.82%. The sex ratio was 1.03 in favor of the female sex. The age groups 30 to 44 years and 0 to 14 years were in the majority with 31.69% and 27.11% respectively (Table 1). Domestic accidents were the most frequent with 33% of cases, followed by (games and sports) in 14% of cases, then brawls and road accidents with respectively 12% of cases and work accidents in 10% of cases (Figure 1). The majority of patients were seen in ordinary consultation, *i.e.* 71% of cases (Figure 2).

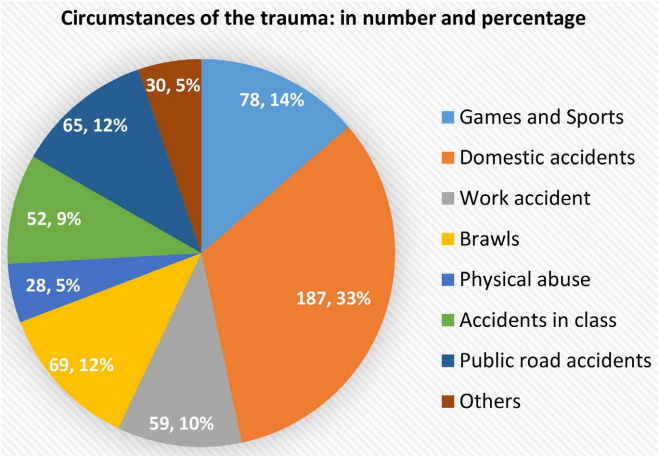

Figure 1. Distribution of patients according to the circumstances of the trauma.

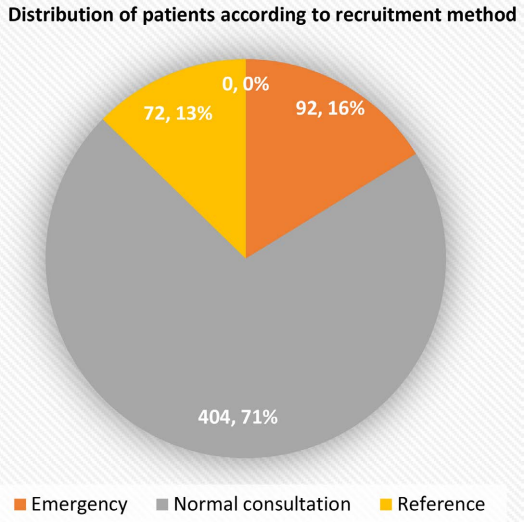

Figure 2. Distribution of patients according to recruitment method.

Closed eye trauma (TOGF) was the most represented with 350 cases or 61.6%. Among them, blues accounted for 58.1% of cases. It was followed by Ocular Appendage Trauma (TAO) with 171 cases or 30.1% of cases and TOGO with 47 cases or 8.3% (Table 2).

Medical treatment was the most used therapeutic modality in 82.4% of cases, followed by surgery in 17.6% of cases (Table 3).

The evolution of the lesions after treatment was favorable in 85.6% of cases and unfavorable in 14.4% of cases (Table 4). However, complications were observed in 5.8% of cases and sequelae in 8.6% of cases (Table 5). Post-traumatic cataracts were the complications found. Nephelions were the cause of the after-effects in 57.1% of cases, followed by other corneal lesions such as opacifications and adherent leukomas with 24.5% and 10.2% of cases, respectively. Reduction of the eyeball or phthysis of the eyeball represented 8.2% of cases (Table 6).

Table 1. Distribution of patients according to sex and age group.

Age range	Sex	Male Workforce (Percentage)	Feminine Workforce (Percentage)	Total Workforce (Percentage)
[0 to 14 years]		86 (15.14%)	68 (11.97%)	154 (27.11%)
[15 to 29 years old]		68 (11.97%)	59 (10.39%)	127 (22.36%)
[30 to 44 years old]		78 (13.73%)	102 (17.96%)	180 (31.69%)
45 years and over		48 (8.45%)	59 (10.39%)	107 (18.84%)
Total		280 (49.29%)	288 (50.71%)	568 (100%)

Table 2. Distribution of patients according to the type of anatomo-clinical lesion according to BEET.

Trauma group	Numbers and percentage	Anatomo-clinical type	Workforce	Percentage (%)
Closed eye trauma (TOGF)	350 (61.6%)	Contusion	**330**	**58.1**
		Superficial foreign body	**16**	**2.8**
		Eye burn	**04**	**0.7**
Open globe eye trauma (TOGO)	47 (8.3%)	CEOI	**26**	**4.6**
		Penetrating wounds	**15**	**2.6**
		Globe Burst	**06**	**1.1**
Trauma to the ocular adnexa (TAO)	171 (30.1%)	Eyelid damage	**171**	**30.1**
Total	**568 (100.0%)**	Total	**568**	**100**

Table 3. Distribution of patients according to therapeutic modalities.

Therapeutic modalities	Types of trauma	Workforce	Percentage	
Medical	TOGF	468	82.4	
Surgical (100%)	TOGO (Cornea and sclera)	47	8.3%	17.6%
	TAO (eyelid sore)	53	9.3%	
Total		568	100.0%	

Table 4. Distribution of patients according to the evolution of the types of trauma.

Evolution	Type of trauma	Frequency	Percentage	
Favorable	Closed eye trauma (TOGF)	315	55.5	85.6
	Trauma to the ocular adnexa (TAO)	171	30.1	
Not favorable	Closed eye trauma (TOGF)	35	6.1	14.4
	Open globe eye trauma (TOGO)	47	8.3	
Total		568	100.0	

Table 5. Distribution of patients according to the evolution of the lesions.

Evolution of lesions	Effective	Percentage
Good development	486	85.6
Complications	33	5.8
Side effects	49	8.6
Total	568	100

Table 6. Distribution of patients according to types of complications and after-effects.

Types of complications and after-effects		Effective	Percentage
Complications	Post-traumatic cataract	33	100
	Total	33	100
Side effects	Nephelion	28	57.1
	Corneal opacification	12	24.5
	Adherent leukoma	5	10.2
	phthisis of the globe	4	8.2
	Total	49	100.0

4. Comments and Discussions

4.1. Borders

Were the retrospective nature of the study and the absence of data on the visual acuity of our patients. Its interest lies in the clinical description and information on the severity of the lesions observed.

4.2. Frequency

Our sample (568 cases) showed that trauma represents 6.82% of the reasons for consultation at the ophthalmology department of the CSRef of Kati over the period from January to December 2015.

It appears that these traumas constitute a frequent reason for consultation in the said service. This rate, much lower than that reported by Bakayoko [10] in Mali which noted (22.46%) patients seen in emergency consultation. Furthermore, Doutetien *et al.*, [11] in Cotonou; Ahnoux *et al.* [12] in Abidjan; Lam and N'diaye [9] in Dakar; respectively report a frequency higher than ours with 21.1%; 31% and 38.5%. On the other hand, Malle [13] in Ouellessebougou in Mali (whose center is a little similar to ours) as well as Ebana MSR [14] found a frequency lower than ours with 3.30% and 2.8% respectively.

In Guinea, in a study on a pediatric population, LAMA [8], reports a frequency of 9.31% of trauma and 30.92% of all ocular trauma.

Our frequency was also close to that of Sovogi [15] in Guinea and G. Yaya [16] in Bangui, who have found a respective prevalence of 5.9% and 8.1% in children aged 0 to 15 years and comparable to those of Traoré M [17] in Fana, Kokou Vonor in Kara, Togo [18] and Chua in India who respectively noted a frequency of 6.18%, 8.81% and standardized 5.1% (n = 162; 95% CI 4.3% to 6.1%) [19].

Our low rate could be explained by the fact that populations do not systematically use health services. Several cases deemed not serious are first treated in traditional medicine then in healthcare practices and do not always reach a specialized center like ours which is a secondary ophthalmology center.

4.3. Gender

There was a slight female predominance with a rate of 50.7%, or a sex ratio of 0.96.

This slight predominance is contrary to what has been observed in most studies, a male predominance, this is the case of: Sissoko [5], Bakayoko [10]; Trunk [13], Traoré M [17] and Cheick Sidi [20] in Mali which recorded respectively 60.87%; 68.24%; 52.94%; 68.2% and 68.5%; somewhere else Sovogi [15] in Guinea, Lam [9] in Senegal, Doutetien *et al.* [11] in Cotonou, Bella-Hiag [21] in Douala and have recorded respectively 60.4%; 69.4%; 62.4%; and 64%. Elsewhere, Voon LW in Singapore found that trauma cases were more likely to be male (OR: 4.2, 95% CI: 3.0, 5.4) [22]. We have found that trauma is common, especially among housewives.

4.4. Age

The age group of 30 to 45 years was predominant with 31.69%. Our predominant age group is almost similar to Ebana MSR [14] who found the 30 - 44 age group with 41.7% and comparable to that of Sovogui [15] which found the 20 - 39 age group predominant with 43.9%.

On the other hand it is different for the other studies and is: from 0 to 10 years with 42.57% found by Bakayoko [10], from 1 to 10 years with 45.8% found by Cheick Sidi [20] IOTA; from 5 to 14 years old with 26.47% found by Malle [13] in Ouellessebougou in Mali; and 6 - 15 years old with 28.30% found by Lam [9] in Senegal.

4.5. Circumstances of Occurrence or Causes

The circumstances in which the trauma occurred were dominated by domestic accidents which caused trauma in 32.4% of cases, then by games and sports in 13.73% of cases. In the study by Doutetien *et al.* [11] the circumstances in which the trauma occurred were dominated by playing accidents in 41% of cases as well as that of Diallo Aziz [23] in 31.9% of cases. On the other hand according to G Yaya *et al.* [16] it is mistreatment with 25.9% of cases which predominates in Bangui among children, according to Sovogui [15] Work accidents predominate in 42.7% of cases in Guinea. Elsewhere, Voon LW in Singapore found that workplace accidents were the most common cause and accounted for 71.4% [22].

4.6. Method of Recruitment

More than the majority of patients (71%) were seen in ordinary consultations. However, only (16%) of patients were seen urgently and (13%) referred by a health center for better care.

Our results are comparable to those of Malle (13) in Ouellessebougou which finds 85.30% of cases seen in ordinary consultation; 8.82% seen urgently and 5.88% seen after referral.

We observed a very low rate of emergency room consultations. This could be due to the low socio-economic level of the population, ignorance, neglect of patients or their parents and the remoteness of treatment centers.

4.7. Clinical Anatomical Lesions Observed

TOGF accounted for 61.6% of cases, TOGO accounted for less than 8.3% of cases, and TAO accounted for approximately 30.1% of cases.

Our frequency of TOGF is lower than that of Ebana MSR (11 = 14) which found 91%, on the other hand it is higher than that of Bakayoko [10] who found 41.22%, much higher than that of M. Boukhrissa *et al.* [24] in Morocco which found 14.8%.

Our TOGO frequency is comparable to that of Ebana MSR (11 = 14) which was 9% higher than those of Bakayoko [10] who found 58.78% and M. Boukhrissa *et al.* [24] in Morocco who found 85.1%.

More than half of the traumas were contusions with (58.1%), followed by eyelid lesions with (30.1%), then CEIO with (4.6%) eye wounds with (2.6%), burns (0.7%).

Our results are comparable to those of Traoré M [17] and Sovogi [15] who respectively found a predominance of contusions in 53.4% and 63.6% of cases.

Our results are different from those of Lam [9] which found eye wounds and contusive lesions in 62% and 24% of cases respectively. Eye injuries were found respectively in 79.4% in Sidi [20] and 77.8% in Aziz [23]. The CEOIs were found in our series at 4.6%, and this rate is close to those of Bakayoko [10] and Sovogi [15] which respectively found 4.05% and 2.4%. Penetrating wounds were found in 2.6%, a result lower than the results of M Sissoko [5] which found corneal wounds in 8.69%. Eyelid lesions represented 30.1% of our cases, lower than the results of M Sissoko [5] which found eyelid wounds in 78.25%, and skin abrasions in 7.97%.

4.8. Therapeutic Modalities

Treatment was surgical in 17.6% of cases. Our surgery rate is low compared to those of Bakayoko [10], Cheikh *et al.* [20] in Mali and Wang *et al.* [25] in China which were 63.51%; 94.8% and 92.8% of cases. This difference could be explained by the method of recruitment in the study and its status as a second level center in the health pyramid.

4.9. Developments

Complications were observed in 5.8% of cases and sequelae 8.6% of cases. Our rates are low compared to those of Bakayoko [10] which noted 22.97% of complications and 27.03% of after-effects linked to the trauma. This difference could be explained by the size of our sample. Chua in India had found that the trauma-related causes of visual impairment were corneal scarring (80.0%, 4 eyes) and macula scarring (20.0%, 1 eye) and trauma-related causes of blindness included corneal scarring (30.0%, 3 eyes), ocularphthysis (20.0%, 2 eyes), macular scar (30.0%, 3 eyes) and optic atrophy (20.0%, 2 eyes) [19].

All of our complications were post-traumatic cataracts. Nephelions were the cause of the after-effects in 57.1% of cases, followed by other corneal lesions such as opacifications and adherent leukomas with 24.5% and 10.2% of cases, respectively. Reduction of the eyeball or phthysis of the eyeball represented 8.2% of cases.

5. Conclusions

Ocular trauma is a frequent reason for consultation regarding ophthalmological pathologies at CSREF Kati. It occurs in subjects of all ages and both sexes. Domestic accidents are the cause of trauma, the majority of patients were seen in ordinary consultations, and bruises represented more than half of the traumas.

Given the complexity, severity and after-effects of these traumas, emphasis must be placed on information, education and communication for the prevention of these traumas.

Conflicts of Interest

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

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