

## Clinical and Epidemiological Aspects of Eye Trauma at the Ouelessebougou Reference Health Center in the Koulikoro Health District in Mali

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### Abstract

### Original Research Article

**Introduction:** Ocular trauma leads to isolated or associated lesions. These lesions are the cause of blindness worldwide. The frequency and nature of these traumas are diverse and varied. The aim of this study was to describe the clinical and epidemiological aspects of these ocular traumas at the reference health center of Ouelessebougou in Mali. **Patients and Method:** It was about a retrospective cross-sectional study, carried out at the reference center of Ouelessebougou. It included all patients with ocular trauma received and followed up between July 1 and December 31, 2018. **Results:** The frequency of ocular trauma was 3.30%. It occurred in young subjects aged 5 to 14 years (26.47%); predominated the male subject with 52.94%. The consultation time was in 41.18% of cases greater than or equal to 72 hours. Domestic accidents were the main circumstances of occurrence with 55.8% of cases. The involvement was unilateral in 85.3% and bilateral in 14.7%. Visual acuity was positive Light Perception (PL+) at finger count (CLD) 3 meters in 44.12%. Contusion was the main type of trauma with (67.65%) followed by wounds with 20.59% of cases. Corneal opacities represented the main sequelae with 3 cases out of 34 or 8.82% of cases. **Discussion:** Ocular injuries most often occur in young, male subjects. The lesions are multiple and varied and can be a source of disabling sequelae. **Conclusion:** Eye injuries are a common condition, emphasis should be placed on prevention through mass awareness. **Keywords:** Ocular trauma, epidemiology, sequel, Ouelessebougou.

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## INTRODUCTION

Ocular trauma leads to isolated or associated lesions. They most often involve one or more anatomical structures of the globe and are involved in the functional prognosis of the traumatized eye. Several factors of these injuries are associated with specific activities, sometimes with medico-legal implications. Eye trauma is a major but preventable cause of blindness and low vision worldwide [1, 2].

Much work has been done on trauma worldwide and in Africa.

The frequency and nature of these traumas are diverse and varied. Regis *et al.*, in 2004 [3], in Paris, had reported Eleven cases of serious obstetric ocular trauma, ten of which were the consequence of deliveries assisted by instrumental maneuvers (nine by forceps, and one by spatulas), and one was due to a particularly long labor (twenty hours). In Abidjan, Ahnoux *et al.*, [4], reported a frequency of 31%, in Dakar it was 38.5%, in Guinea Conakry, Dantouma *et al.*, [5] in 2023 as well as Sovogui *et al.*, [6] in 2022, respectively observed 3.4% and 5.9%, in Mali, Sissoko [7] yields 4.80% in times of COVID 19.

Eye injuries are the cause of blindness in approximately half a million people worldwide. They are often the main cause of vision loss, or unilateral visual impairment, and would represent the 3rd indication for hospitalization in ophthalmology [8].

At the reference health center of Ouélessébougou, very little or no study on eye trauma, hence the interest of this study. The aim was to study the clinical and epidemiological aspects of these ocular traumas

## PATIENTS AND METHOD

This was a prospective cross-sectional study carried out in a 2nd level ophthalmological center located in the health district of Ouélessébougou in the Republic of Mali and which covered the period from July 1 to December 31, 2018. All patients who consulted for trauma ocular during the study period were included. This involved collecting the following data during a clinical examination: - the identity of the patient: age, sex, origin, level of study, - the history of the disease: the circumstances of occurrence, the

traumatizing agent.- The therapeutic route: consultation time, mode of admission.- Functional signs; the physical signs (visual acuity, examination of the annexes, the anterior segment and the posterior segment if possible) - to determine the complications and sequelae. The media used for data collection were the consultation register, the patient file, the operating room register and the study information sheet. Input and processing were done using the EPI-INFO software version 6.04dfr.

## RESULTS

Out of a total of 1030 patients, we recorded 34 cases of eye trauma, i.e. a frequency of 3.30% over the period from July 1 to December 31, 2018.

The age group from 5 to 14 years was the most represented, ie 26.47% (Table I). The male sex to represent 52.94% against 47.07% for the female sex with a sex ratio of 1.12 in favor of the male sex. The age groups 5 to 14 years were the most represented with 26.47 cases followed by 35-44 years with 20.59 (Table II).

**Table I: Distribution of patients according to age**

Age	Workforce	Percentage
< 5 years	2	5.88
05-14 years old	9	26.47
15-24 years old	4	11.76
25-34 years old	6	17.65
35-44 years old	7	20.59
45 years and over	6	17.65
<b>Total</b>	<b>34</b>	<b>100</b>

**Table II: Distribution of patients according to consultation time**

Consultation period	Workforce	Percentage
24 first hour	10	29.41
24 to 48 hours	10	29.41
72 hours and more	14	41.18
<b>Total</b>	<b>34</b>	<b>100</b>

The rural area was the place of origin in 85.30% of cases against 14.70 for the urban area. The majority of our patients, 85.30%, were seen in ordinary consultation against 8.82% seen in emergency and 5.88% under referral. The consultation time was in

41.18% of cases greater than or equal to 72 hours (Table III). Pain and tearing were the main reasons for consultation with respectively 41.18% and 20.59 of cases.

**Table III: Distribution of patients according to the circumstance of occurrence**

Circumstance of occurrence	Workforce	Percentage
AVP	4	11.77
games accident	2	5.88
Household acid	19	55.88
Fight	1	2.94
sports accident	1	2.94
CBV : intentional blow and injury	4	11.77
CE: foreign body	2	5.88
Others	1	2.94
<b>Total</b>	<b>34</b>	<b>100</b>

AVP: public road accident CBV: intentional blow and injury, CE: foreign body

Domestic accidents were the main circumstances of occurrence with 55.8% of cases,

followed by public road accidents with 11.77 of cases (table IV).

**Table IV: Distribution of patients according to AVL (distance visual acuity) of the traumatized eye on admission**

Visual acuity on admission	Right eye	Left eye	TOTAL
10/10th	2(5.88%)	2(5.88%)	4(11.77%)
6/10 to 9/10	3(8.82%)	5(14.71%)	8(23.53%)
1/10 to 5/10th	4(11.77%)	3(8.82%)	7(20.58%)
PL+ at CLD 3m	6(17.65%)	9(26.47%)	15(44.12%)
<b>Total</b>	<b>15(44.12%)</b>	<b>19(55.88%)</b>	<b>34(100%)</b>

Traumatic agents were mainly represented by plant straws, braid needles, pieces of wood and battery shards with respectively 26.47%, 20.59%, 17.66% and 11.76% of cases. The involvement was unilateral in 85.3% and bilateral in 14.7%. Visual acuity at admission ranged from positive light perception (PL+) to finger count (CLD) 3 meters in 44.12% (table V).

Contusion was the main type of trauma with (67.65%) followed by wounds with 20.59% of cases. Simple contusive lesions, contusive cataracts and corneal wounds were the most represented with 41.59%, 20.59% and 11.76% respectively (Table VI). Post traumatic cataract was the main complication with 20.59% of cases.

**Table V: Distribution of patients according to the nature of lesions**

Nature of lesions	Workforce	Percentage
Corneal wound	4	11.76
Palpebral wound	3	8.82
upper corneal foreign body	3	8.82
Dislocation of the lens	2	5.88
Contusive cataract	7	20.59
Simple bruise	14	41.18
Corneal abrasion	1	2.95
<b>Total</b>	<b>34</b>	<b>100</b>

**Table VI: Distribution of patients according to the nature of the traumatic agent**

Nature traumatic agent	Workforce	Percentage
braid needle	7	20.59
Vegetable straw	9	<b>26.47</b>
Whip	2	5.88
Ball	1	2.94
piece of iron	1	2.94
stone throw	1	2.94
Punch	2	5.88
battery water	4	11.76
Piece of wood	6	17.66
Others	1	2.94
<b>Total</b>	<b>34</b>	<b>100</b>

Medical treatment was the most used with 79%, followed by cataract surgery, corneal suture and eyelids with respectively 12%, 6% and 3% of cases. After treatment, 52.94% of our patients had visual acuity of 10/10 and 5.88% had poor vision, varying

between positive Light Perception (PL+) and counting fingers (CLD) at 3 meters (Table IX). Corneal opacities represented the main sequelae with 3 cases out of 34 or 8.82% of cases.

**Table VII: Distribution of patients according to type of trauma**

Type of trauma	Workforce	Percentage
Contusion	23	67.65
Wound	7	20.59
Burn	1	2.94
foreign body	3	8.82
<b>Total</b>	<b>34</b>	<b>100</b>

**Table VIII: Distribution of patients according to the nature of lesions**

Nature of lesions	Workforce	Percentage
Corneal wound	4	11.76
Palpebral wound	3	8.82
corneal foreign body	3	8.82
Dislocation of the lens	2	5.88
Contusive cataract	7	20.59
Simple bruise	14	41.18
Corneal abrasion	1	2.95
<b>Total</b>	<b>34</b>	<b>100</b>

**Table IX: Distribution of patients according to AVL (distance visual acuity) of the traumatized eye on discharge**

Visual acuity on discharge	Right eye	Left eye	TOTAL
10/10th	8	10	18(52.94%)
6/10 to 9/10	4	5	9(26.47%)
1/10 to 5/10th	2	3	5(14.71%)
PL to CLD 3m	1	1	2(5.88%)
<b>Total</b>	<b>15</b>	<b>19</b>	<b>34(100%)</b>

## DISCUSSION

Eye injuries are a major cause of consultations at the Ouelessebougou reference health center with a frequency of 3.3% of cases. Our frequency is lower than that reported by Sovogi [6] with 5.9%, of Makita C [9] with 12.8%. It is close to that of Sissoko [7] to Iota (Institute of Tropical Ophthalmology of Africa) with 4.8% and from Alamou *et al.*, [10] with 3.9% of cases. On the other hand, it was higher than that of Atipo Tsiba PW *et al.*, [11] in Brazzaville with 1.80%. This difference in frequencies could be explained by the type of study and also by the methodology.

The male sex was the most represented with a rate of 52.94% against 47.07% for the female sex. The similar result was observed in most of the studies: G Koki *et al.*, [2] in Cameroon in 2015, Alamou S *et al.*, [10] in Benin, Omolase *et al.*, [1]. in Nigeria, Sovogui in 2022 [6] and Dantuma [5] 2023 in Guinea.

This male predominance could be explained by the fact that men are more often engaged in traumatic risk activities. In the young and or adolescent boy, it can be explained by their turbulence and their imprudence which make them have a predilection for violent games.

Ocular trauma occurs most often in young people. In our series, the age groups 5 to 14 years were the most represented with 26.47 cases followed by 35-44 years with 20.59. M Sissoko *et al.*, [7], in Mali, reported that patients under the age of 15 were the most numerous, at 52.17%. According to the literature, trauma is more frequent after six years, and the male predominance increases with age [12].

The consultation time was in 41.18% of cases greater than or equal to 72 hours against 29.4% within 24 hours following the trauma. This delay of more than

72 hours is comparable to that reported by Sidibe M *et al.*, [13], who found that 47.7% of patients who suffered braid needle trauma consulted after the 72nd hour. Elsewhere Sovogui [6] and Ebana MSR *et al.*, [14], respectively reported a time to consultation within 24 hours of 26.8% and 41.2%. On the other hand, Makita C *et al.*, [9], had found a delay of 48 hours and more after the trauma in 64.8% of cases.

This delay in the consultation could be explained in our situation by the fact of the fearful attitude of the parents, especially in the case of abuse, to the underestimation of the initial lesions and probably to the costs of care. Some only consult when a complication such as infection or cataract or loss of sight sets in.

The circumstances of occurrence of trauma were dominated by domestic accidents with 55.88%. Other authors like Sovogui [6] in Guinea, Merle H and Mesnard [15] in Australia, Maloba V and Coll [16] in the DRC had respectively reported 42.7%, 71% and 36.46% of work accident cases as the predominant circumstance.

The causal agent was 26.7% of cases of plant nature (wood, branch, thorn, etc.). This predominance of plant bodies was found in the series of Sovogui [6], which respectively reported a predominance of plant agents with 31.7%. On the other hand, Bounsif Z *et al.*, [17], found a predominance of metal objects as traumatic agents. This variation of injurious agent was reported by M Boukhrissa *et al.*, [18] who cited the metal in 48.1%, the glass in 13.5% and the vegetable foreign body in 7.4%.

The involvement was unilateral in 85.3% and bilateral in 14.7%. This observation corroborates those of Bella-Hiag *et al.*, [19], in Cameroon and Okoye *et*

*al.*, [20], in Nigeria, reported a predominance of unilateral involvement with 55.5% and 57.1% of the left eye respectively.

In addition, Sidibe M *et al.*, [13], in Mali and Ahnoux Zabsonré *et al.*, [4], in Abidjan observed 100% unilateral attack. Regarding the frequency of involvement of both eyes, we let's adhere to the idea of Lam A [21], in Senegal for whom: "if a difference appears in the frequency of injuries between the right eye and the left eye, it can only be due to chance in the direction of the projectile".

Visual acuity was between PL+ and CLd 3 m in 44.12% of cases on admission, which explains the severity of the lesions. Simple contusive lesions, contusive cataracts and corneal wounds were the most represented with respectively 41.59%, 20.59% and 1.76%. The high frequency of contusions is confirmed by Tchabi *et al.*, [22], in Benin who had noted that between 16 and 45 years there were 58.6% of eye contusions. On the other hand Makita [9] had observed a frequency of 62.7% of open globe lesions, including 45.2% of corneal wounds. These different lesions explain the polymorphism of post traumatic lesions in ophthalmology observed by many authors [13, 21, 23, 24].

Post traumatic cataract was the main complication with 20.59% of cases. This frequency is higher than that observed by Sangho who had found 6.4%.

Our frequency of 5.88% corneal abscess associated with endophthalmitis was comparable to that of SANGHO [25] with 7.7% of cases.

The main sequelae were corneal opacities with 3 cases out of 34 or 8.82% of cases. Which is lower than the data reported by SANGHO [25] with 28.7%.

## CONCLUSION

Eye trauma is a frequent condition, in the majority of cases in young children and particularly in men. The mechanism of occurrence is largely related to adult neglect. The focus should be on prevention through mass awareness.

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