

OCULAR TRAUMA IN A TROUBLED ZONE: Northeastern Nigeria

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Abstract: -

Introduction: Ocular trauma is an important cause of preventable morbidity worldwide, and is a major cause of unilateral visual loss in developing countries. The eye is the third most common organ affected by injuries, after the hands and the feet

Objective: We present the pattern of ocular injuries in Maiduguri: An armed conflict area.

Material and methods A retrospective study of all the case records of patients with ocular trauma was done between January 2013 and December 2015.

Results: Case note of 108 patients were available for this study. There were 86 (66.6%) males and 22(33.3%) females. The age range was between 3 years and 60 years of age. The age range 21 to 30 years was predominant 38 (35.2%). 45 (41.7%) of the patients presented within the first 24 hours. Blast injuries from improvised explosive devises were seen in 54(50.0%), gunshot injuries were seen in 25(23.1%). 27(25.0%) of the patients had ruptured globe, corneal and corneo-scleral lacerations were seen in 19(17.6%) and 14(13.0%) respectively. Visual acuity on presentation and visual acuity on last visit of 6/18 or better was seen in 32 (31.5%) and 38(35.2%) patients respectively, while 62 (57.4%) and 50 (46.3%) had visual acuity of 3/60 or worst on first presentation and on last visit respectively.

Conclusion: The findings from this study highlight a high incidence of severe ocular injury leading to blindness in countries or regions at warA.

Key words: OCULAR TRAUMA, CONFLICT, EXPLOSIVE DIVICE, GUNSHOT



INTRODUCTION

Ocular trauma is an important cause of preventable morbidity worldwide, and is a major cause of unilateral visual loss in developing countries^{1,2,3}. Eye injuries sustained at work have always been a source of concern to ophthalmologist since the first important survey of eye injuries demonstrated that 71% of all severe eye injuries admitted to hospitals occurred at the work place, with more than 12% of these eyes being enucleated⁴. Worldwide, blindness in 1.6 million people is due to ocular trauma, 2.3 million are bilateral low vision patients and 19 million people have unilateral blindness^{1,5}.

Despite the fact that the eye represents only 0.1% of the total body surface⁶, it is the third most common organ affected by injuries⁷, after the hands and the feet. Eye trauma constitutes 7% of all bodily injuries and 10-15% of all eye diseases⁸. Significance of the eye to the individuals and the society is disproportionately higher. It is the organ of sight. Loss of which has a great socioeconomic impact on the individual and the society at large.

It may also result into major lifestyle changes, loss of career opportunities and occasionally permanent physical disfigurement.

However, these injuries do not usually occur as random events as some population groups or certain activities of daily living have increased risks of eye injury because of greater exposure to hazard⁹.

The age distribution for the occurrence of serious ocular trauma is bi-modal, with the maximum incidence in young adults and a second peak in the elderly¹⁰. Both hospital and population-based studies indicate a large preponderance of injuries affecting males^{11,12,13}.

Traumatic eye conditions are well known to predominate among occupational injuries⁹. Many eye injuries are related to particular occupations and certain cultures¹⁰. Farmers on farm land, children at play ground in school, industrial worker working with fast moving machineries and chemical are affected. Both civilian and military personnel are affected in conflict areas.

The eyes have greater risk of injury in conflict than other body parts due to the preferential exposure of the face in combat¹⁴. The open- globe injuries sustained at war or conflict tend to result in more severe and extensive damage¹⁵. The damage is usually due to fragmentations that cause penetrating injuries and to the explosive force that causes concussion of the eyeball¹⁵. Gunshot injuries are common. Mpyet reported gunshot was the commonest cause of ocular injury and was seen 60.9% of patients¹⁶.

Most ocular injury studies in Nigeria were done at peace time. We present a pattern of ocular injuries in Maiduguri: A conflict area.

MATERIALS AND METHODS

Maiduguri is the state capital of Borno, located in North Eastern part of Nigeria. The ophthalmology department of the University of Maiduguri Teaching Hospital (UMTH), a tertiary health facility, serves as a major referral center for eye care in Borno, Yobe, Adamawa states and parts of neighboring Cameroon and Chad. In these states there has been a rising episodes of Military/Boko haram violence with Borno being the epicenter of the violence since 2009 -2015. During this period most of the primary and secondary health facilities were nonfunctional. Thus the bulk of casualties were brought directly to the UMTH center.

A retrospective study of all the case records of patients with ocular trauma was done between January 2013 and Dec 2015. Information extracted includes age, sex, and occupation, time interval of injury before presentation or referral to the eye unit. Presenting complains, presenting visual acuity, nature of injury, circumstance or activity leading to the injury and the causative agent of the injury was extracted. Also obtained from the case note was management modalities' (medical or surgical) and the eventual visual outcome at last visit.

Inclusion criteria

All patients with ocular injuries presenting for the first time to the department of Ophthalmology, UMTH, Maiduguri, during the review period January 2013-December 2015. Ocular Trauma was defined as any injury affecting the eye or adnexae, caused by an external force¹⁶.

Exclusion criteria

All ocular injury patients who presented for the first time earlier than or later than the study period were excluded from the study.

All data obtained were recorded and analyzed with the statistical package for the social sciences version 15 (SPSS).

RESULTS

One hundred and thirteen patients were seen with ocular injury in ophthalmology department between 2013 and 2015. Out of these, case note of 108 patients were available for this study. There were 86 (66.7%) males and 22(33.3%) females. The male to female ratio was M:F=3:1. The age range was between 3-60 years of age. The age range 21 to 30 years was predominant 38 (35.2%). The age and sex distribution is as shown in table 1.

The time of presentation of patients from the onset of trauma is as shown in table 11. 45 (41.7%) of the patients presented within the first 24 hours, 38 (35.2%) in the first one week, and 12 (11.1%) presented within one month of injury.

Blast injuries from improvised explosive devises were seen in 54(50.0%), gunshot injuries were seen in 25(23.1%), road traffic accident 21(19.4%), while other mechanism of ocular injuries in this study includes domestic accidents 3(%), burns 2(1.9%), Cow horn injury 1(0.9%), blow from a fight 1(0.9%) and whiplash affecting the eye 1(0.9%).

Diagnosis on admission was as shown in table 11. Many of the patients had multiple injuries. 27(25.0%) of the patients had ruptured globe, lid laceration were seen in 9(8.3%), corneal and corneoscleral laceration were seen in 19(17.6%) and 14(13.0%) respectively.

Visual acuity on presentation and visual acuity on last visit of 6/18 or better was seen in 32 (31.5%) and 38(35.2%) patients respectively, while 62 (57.4%) and 50 (46.3%) had visual acuity of 3/60 or worst on first presentation and on last visit respectively. Table 1V shows visual acuity distribution on first presentation and on last visit, while table V shows the different types of intervention done.

Table 1: AGE AND SEX DISTRIBUTION OF 108 OCULAR INJURY PATIENTS

AGE GROUG	MALES number (%)	FEMALES number (%)	Total males and females
0—10	12 (11.1%)	8 (7.4%)	20 (18.5%)
11—20	6 (5.5%)	5 (4.6%)	11 (10.2%)
21—30	31 (28.7%)	7 (6.5%)	38 (31.2%)
31 – 40	21 (19.4%)	2 (1.9%)	23 (21.3%)
41 – 50	12 (11.1%)	0 (0.0%)	12 (11.1%)
51 – 60	4 (3.7%)	0 (0.0%)	4 (3.7%)
TOTAL	86 (66.7%)	22(33.3%)	108 (100%)

Table 11: TIME OF PRESENTATION OF PATIENTS TO THE HOSPITAL FROM THE ON SET OF INJURY

TIME OF PRESENTATION	NUMBER (%)
First 24 hours	45(41.7%)
After 24hrs but within seven days	38(35.2%)
After seven but within one month	12(11.1%)
Greater than one month	9(8.3)
Not stated	4(3.7%)
TOTAL	108(100%)

Table 111: DIAGNOSIS ON ADMISSION

S/number	Diagnosis on admission	Number (%)
1	Ruptured globe	27 (25.0%)
2	Corneal laceration	19 (17.6%)
3	Corneo scleral laceration	14 (13.0%)
4	Lid laceration	9 (8.3%)
5	Sub conjunctival hemorrhage	9 (8.3%)
6	Corneal foreign body	6 (5.6%)
7	Traumatic conjunctivitis	6 (5.6%)
8	Hyphaema	5 (4.6%)
9	Traumatic cataract	4 (3.7%)
10	Cranial nerve palsy	2 (1.9%)
11	Corneal opacity	2 (1.9%)
12	Optic atrophy	2 (1.9%)
13	Intra orbital foreign body	1 (0.9%)
14	Corneal burns	1 (0.9%)
15	Orbital rim fracture	1 (0.9%)

Table 1V: Distribution of visual acuity on first presentation and on last visit

Visual acuity	Number (%) on presentation	Number (%) on last visit
Greater than 6/18	32 (31.5%)	38 (35.2%)
6/18—6/60	4 (3.7%)	12 (11.1%)
5/60 – 3/60	6 (5.5%)	4 (3.7%)
Less than 3/60	62 (57.4%)	50 (46.3%)
No record	4 (3.7%)	4 (3.7%)
Total	108 (100%)	108 (100%)

Table V: Interventions on admission

S/ Number	Intervention on admission	Number (%)
1	Medical	25
2	Evisceration	27
3	Corneal repair	19
4	Corneo-scleral repair	14
5	Lid repair	8
6	Foreign body removal	6
7	Cataract extraction	4
8	Referred to other centers	4
9	Refused surgery	1
10	No record	4
11	Total	108 (100%)

DISCUSSION

Ocular trauma once described as the neglected disorder¹⁷ has recently been highlighted as a major cause of visual morbidity. Globally more than half a million blinding injuries occur every year¹⁸

We retrospectively evaluated 108 patients' case notes at the ophthalmology department of UMTH. There was a male (66.7%) preponderance in this study. Similar male preponderance has been reported in ocular traumas^{12,13,19,20}. Several reasons may have accounted for this. First there has been the argument that more male are involve in high risk behavior and vocation, and are more adventurous and aggressive which makes them more prone to ocular Injuries²¹. In addition to these, this study was done in an armed conflict zone particularly over the period of study.

The age group 21-30 constituted 35.2% of the study population. Adeoye¹⁴ reported 46.3% of ocular injuries occurred in age group 21-30 years in a communal conflict-related ocular trauma in Ile-Ife. Oluyemi³ reported 41.5% in their series age less than 15 years old. In this study and that of Adeoye¹⁴, the studies were done in an armed conflict zone. This must have influenced the preponderance of young and active age group involved in this type of conflict.

The interval between injury and presentation varied considerably. 41.7% of the patients presented within the first 24 hours of injury, while 35.2% presented after 24 hours but within first 7 days of injury. 11.1% presented after one week but within one month of injury. Omolase et-al²² reported 37.9% of their series reported within the first 24 hours of injury. Proximity to eye center and awareness of eye services within the center have been cited as likely reasons for early reporting of injuries. Our study was done in a sensitized armed conflict zone with enhanced reporting of injured persons on battle field to health facilities. Undoubtedly early reporting and institution of appropriate intervention will decrease morbidity and improve visual outcome. Our findings are in contrast with those reported by Umeh and Umeh²³. 28.5% of their series reported within the first 24 hours and as many as 10.5% reporting after one month of injury. They noticed a general delay in reporting to the hospital in all types and severity of injuries.

Duke Elder states that explosives injuries to the eye do occur in civilians but they are more common in war, when they are most usually by the bursting of shells, bombs, grenades or berried mines²⁴. The incidence of severe ocular injury leading to blindness in countries at war or with high landmine densities has not been formally evaluated, but reports suggest that it is much higher than in countries at peace²⁵. Blast injuries from explosive devices and gunshot injuries were seen in 50.0% and 25% respectively together constituting about 75% of all ocular injuries in this study. This preponderance of explosive and gunshot injuries in this study is due to the fact that there has been a rising episodes of military/boko haram violence during the study period. Domestic accidents were seen in only 3%. This is in contrast to report by Oluyemi³ who reported that majority of the injuries occurred as household accidents. . Emem⁶ reported physical assault in form of slap, fist blow during a fight as the commonest cause of ocular injury seen in 62.2%

The eyes have greater risk of injury in conflict than other parts of the body due to preferential exposure of the face in combat¹⁴. Open globe injuries sustained at war or conflict tend to result in more severe and extensive damage¹⁵. Ruptured globe, corneal and corneoscleral laceration together constituted 55.6% in this study. Ohumwangho et-al⁴ in a study on occupational eye injury among sawmill workers in Nigeria reported the common form of ocular trauma seen was superficial conjunctiva or corneal foreign body (71.2%). These variations in preponderance of type of ocular injury may be due to difference in population studied and either in peace time or conflict time. Our study was done in a conflict zone. This has no doubt influence the type of ocular injuries seen.

Ocular trauma remains an important cause of preventable and predominantly monocular visual morbidity and blindness³. Sudden blindness in an otherwise healthy young man is devastating, as vision is the most important sense, accounting for more than 90% of the total sensory input²⁶.

The overall visual acuity of 6/18 or better was seen 31.5% and 35.2% on first presentation and on last visit respectively in this study. While those with visual acuity of 3/60 or less on first presentation and on last visit were 57.4% and 46.3% respectively. Low visual outcome was not surprising considering the majority of the ocular traumas in this study were penetrating eye injuries from explosive devises and gunshot.

CONCLUSION:

The findings from this study highlight incidence of severe ocular injury leading to blindness in countries or regions at war. There is the need for institutional strengthening to take care of such casualties when they do occur.

REFERENCES

- [1].Negrel AD, Thylefors B. The global impact of eye injuries. *Ophthalmic Epidemiol* 1998;5:143-169
- [2].Thylefors B. Epidemiological patterns of ocular trauma. *Aust N Z J Ophthalmol* 1992; 20:95-98
- [3].Oluyemi F. Epidemiology of penetrating eye injury in Ibadan: A 10-year hospital based review. *Middle East African Journal of Ophthalmology* 2011;18:2 p 159-163
- [4].Uhumwangho OM, Njinaka I, Edema OT, Dawodu OA, Omoti AE. Occupational eye injury among sawmill workers in Nigeria. *Asian journal of Medical Sciences* 2010; 2(5): 233-236
- [5].Kinderan YN, Shrestha E, Maharjan IM, Karmacharya S. Pattern of ocular trauma in Western Region of Nepal. *Nepal J Ophthalmol* 2012; 4(7): 5-9
- [6].Emem A, Uwemedimbuk E. Prevalence of traumatic ocular injuries in a teaching hospital in South-South Nigeria- A two year review. *Advance Tropical Medicine and Public Health International* 2012; 2(3): 102-108
- [7].Nordber E. Ocular injuries as a public health problem in sub-saharan Africa: Epidemiology and prospect for control. *East Afr Med. J* 2000; 77: 1-43
- [8].Acar U, Tok OY, Acar DE, Burcu A, Ornek. A new ocular trauma score in pediatric penetrating eye injuries. *Eye* 2011; 25: 370-374
- [9].Okoye OI. Eye injury requiring hospitalization in Enugu, Nigeria. A one-year survey. *Nigerian Journal of Surgical Research*. 2006; 8(1-2): 34-37
- [10].Desai P, MacEwen CJ, Baines P, Minaissian DC. Epidemiology and implications of ocular trauma admitted to hospital in Scotland. *J Epidemiol Community Health* 1996; 50(4): 436-441
- [11].MacEwen CJ. Eye injuries: a prospective survey of 5671 cases. *British Journal of Ophthalmology* 1989;73(11): 888-894
- [12].Katz J, Teilsch JM. Lifetime prevalence of ocular from the Baltimore Eye Survey. *Achieves of Ophthalmology* 1993; 111(11): 1564-1568
- [13].Macewen CJ. Ocular injuries. *Journal Royal College of Surgeons of Edinburgh* 1999; 44(5): 317-323
- [14].Adeoye AO, Olateju EO, Soetan EO. Communal conflict-related ocular trauma. *Nigerian Journal of Clinical Practice* 2000; 5(1): 1-4
- [15].Sobaci G, Mutlu FM, Bayer A, Karagul S, Yildirim E. Deadly weapon-related open-globe injuries: Outcome assessment by the ocular trauma classification system. *American Journal of Ophthalmology* 2000; 129(1): 47-53
- [16].Mpyet CD, Alli S, Wade P, Agaba B. Ocular injuries in a civilian conflict in jos. *Nigerian Journal of Ophthalmology* 2004; 12(1): 10-13
- [17].Parver L. Eye trauma. The neglected disorder. *Arch Ophthalmol* 1986; 104(10): 1452-1453
- [18].Macewen CJ. Ocular injuries. *JR Coll. Surg. Edinb.*1999; 44: 317-323
- [19].Olurin O. Eye injuries in Nigeria. *Am J Ophthalmol* 1971; 72(1): 157-166
- [20].Adeoye AO. Eye injuries caused by locally manufactured dane-guns. *Nig J Ophthalmol* 1996; 4(1): 27-30
- [21].Ajaiyeoba AI. Ocular injuries in Ibadan. *Niger J Ophthalmol* 1995; 2: 18-24
- [22].Omolase CO, Omolade EO, Ogunleye OT, Omolase BO, Ihemedu CO, Adeosun OA. Pattern of ocular injuries in Owo, Nigeria. *Journal of ophthalmic and visual research* 2011; 6(2): 114-118
- [23].Umeh RE, Umeh OC. Causes and outcome of childhood eye injuries in Nigeria. *Eye* 1997; 11: 489-495
- [24].Duke-Elder S. Explosion and gunshot injuries. *System of Ophthalmology*, vol 14. London; H. Kimpton 1972; 671
- [25].Heather J. Severe ocular trauma due to land mines and other weapons in Cambodia. *Community Eye Health* 1997; 10(2): 37-39
- [26].Wong TY, Seet B, Ang CL. Eye injuries in twentieth century warfare: A historical perspective. *Surv Ophthalmol* 1997; 41(6): 433-459