

Ocular Emergencies in a Rural Hospital: A 5 Year Retrospective Clinical Audit

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Purpose: To study the magnitude of the ocular emergencies and to explain the health professional about its prevention and better management.

Material and Methods: This retrospective clinical audit was conducted over a period of 5 years from 1st January 2008 to 31st December 2012 at the department of Ophthalmology, Burdwan Medical College and Hospital, Burdwan, West Bengal. A comprehensive review of the record available for ocular emergencies was carried out.

Results: Total 5674 patients were attended admitted in the Ophthalmology emergency. Male and female were 3764 and 1910 respectively. Male: Female ratio was 1.97:1. Traumatic ocular emergencies were 4071 (71.75%) and non-traumatic ocular emergencies were 1603 (28.25%). Most common cause of traumatic ocular emergency was extra-ocular foreign body 1848 (45.40%) followed by Open globe injury 976 (23.97%). In traumatic ocular emergencies male and female were 3044 (74.77%) and 1027 (25.22%) respectively. Most common presented age group was third and fourth decade. Among the open globe injury (n=976) 825 (84.53%) episodes were due to accidents. Common source of open globe injury was due to stone 450 (54.55%). Corneal ulcer 341 (21.27%) and acute glaucomas 311 (19.4%) were the leading causes of non-traumatic group. Minor ocular injuries were managed as day care basis. Open globe ocular injuries were managed with primary repair. Others ocular emergencies were given conservative medications.

Conclusions: Increased public health awareness will prevent inadvertent incidences of ocular emergencies in the community. Early intervention of all ocular morbidities in the community will help reduce the burden of non-traumatic ocular emergencies.

The word audit is "a mean of quality control for medical practice by which the profession shall regulate its activities with the intention of improving overall patient care"¹. An audit of clinical practice is the analysis of the data either prospectively or retrospectively to determine both quantitatively and qualitatively of the work load of an institution or individual department. It includes numbers of admissions, patients' demographics, various complications and mortality².

Previously published literatures have shown that traumatic ocular injury was more common in

males³. They have also reported that open globe injury was the most prevalent ocular emergency. It has been found that younger workers (25 - 44) are more susceptible to severe trauma⁴. It has been further reported that in India and other developing countries corneal abrasion in agriculture-worker is a major risk factor for causation of microbial keratitis⁵.

Ocular emergency cases are of varied nature, from accidental foreign body injury to severe sight threatening perforation of globe. In spite of significant prevalence of ocular emergency in Burdwan region no recent data is available. A five year retrospective

clinical audit from January 2008 to December 2012 is presented in this study to evaluate the patients attending in the emergency department for ocular emergency services. The aim of this audit is to determine the prevalence and causes of emergency ocular problems in a medical college and hospital in rural setup.

MATERIAL AND METHODS

A comprehensive observational retrospective audit was done in the department of ophthalmology Burdwan Medical College from January 2008 - December 2012.

The data was collected from emergency inpatients registers, indoor admission registers, out Patients registers and minor operation theater registers of the department of ophthalmology. Data on patient age, gender, occupation, date of admission, etiology of disease / trauma if any, presenting complains, and the treatment offered to them were analyzed.

From the above database, patients were classified into traumatic and non-traumatic ocular emergencies. Age and sex distribution was studied among both the groups. According to the nature of trauma the traumatic emergencies were further classified into: extra-ocular foreign body induced injuries, open globe injuries and closed globe injuries. Non traumatic ocular emergencies were further classified according to the nature of the disease. Among the non traumatic group, corneal ulcers were further sub-classified according to etiological agent.

RESULTS

Between January 2008 - December 2012, the Department of Ophthalmology, Burdwan Medical College provided general and specialized emergency services to 5,674 patients in total. Therefore on average 1,135 patients per year and about 3.15 patients/day attended the emergency Department of Ophthalmology of Burdwan Medical College and Hospital.

Total 5,674 patients were seen / admitted in the Ophthalmology emergency. Among them male and female were 3,764 and 1,910 respectively. Male: Female ratio was 1.97:1. The youngest patient in this audit was 6 months old and the eldest was 90 years and the peak age group was 2nd and 3rd decades of life. Traumatic ocular emergency cases were 4071 (71.75%) and non-traumatic cases were 1603 (28.25%).

The most common traumatic ocular emergency was extra-ocular foreign body 1848 (45.40%) followed by open globe injury 976 (23.97%). In traumatic ocular emergency male and female were 3,044 (74.77%) and 1,027 (25.22%) respectively. Among extra-ocular foreign body, the most common site of foreign body lodgment was cornea 1,280 (76%) followed by tarsal plate 202 (11.99%) and Iron 1,125 (66.80%) was the most common foreign body followed by sand 286 (16.98). Among the open globe injury 825 (84.53%) episodes were due to accidents. Common source of accidental open globe injury was due to stone 450 (54.55%) (Fig.2). Most common site of open globe injury was cornea 632 (62.94%) followed by sclera-corneal junction with uveal prolapse 223 (22.21) (Table 5). Among closed globe injury cases 421 (10.34%) hyphema 214 (50.83%) was the most common presentation (Table 6). Corneal ulcer 341 (21.27%) and acute glaucomas 311 (19.4%) were the leading causes of non-traumatic group. Bacterial etiology 198 (58.06%) was the most common cause followed by viral 94 (27.56%) (Fig. 1).

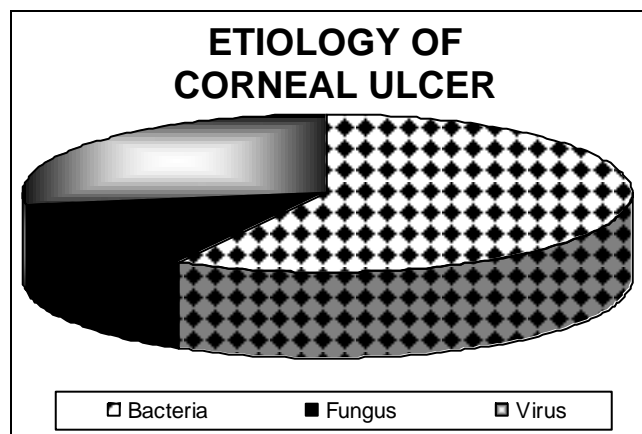


Fig. 1: Showing etiology of Corneal ulcer among patients in Non-traumatic group (n = 341)

Age and sex distribution of non-traumatic and traumatic groups were shown in (Table 1, 2) respectively. The frequencies of non-traumatic and traumatic ocular emergencies were shown in (Table 3, 4) respectively.

DISCUSSION

An audit of surgical outcome can be seen as the final step in what had been termed the “journey of care” for both the individual patient and for the population as a

whole⁶. Ocular emergency cases remain the serious clinical problem and if not managed properly it could be sight threatening.

Table 1: Age and Sex Distribution of Non-Traumatic Group (n = 1603)

Age Distribution	Male n (%)	Female n (%)
0 - 19 years	183 (11.42)	107 (6.67)
20 - 39 years	274 (17.1)	156 (9.73)
40 - 59 years	286 (17.84)	189 (11.79)
60 and above	258 (16.1)	150 (9.36)
Total	1001 (62.45)	602 (37.55)

Table 2: Age and Sex Distribution of Traumatic Group (n = 4071)

Age Distribution	Male n (%)	Female n (%)
0 - 19 years	672 (16.51)	224 (5.5)
20 - 39 years	1395 (34.27)	502 (12.33)
40 - 59 years	515 (12.65)	216 (5.31)
60 and above	404 (9.92)	143 (3.51)
Total	2986 (73.35)	1085 (26.65)

In our study majority of the patients of non-traumatic ocular emergencies were middle aged. This could be explained by the fact that certain diseases of older age groups present as ocular emergency, such as lens induced glaucoma (LIG), and angle closure glaucoma (ACG). Male Predominance was seen in both groups.

In this study we found that almost 1/3rd patient out of the total ocular emergency was due to trauma. Trauma was a common ocular morbidity and damage may be immediately apparent or may develop after the injury as a secondary complication. However ocular trauma is mostly preventable by the use of suitable eye protection⁷. Ocular trauma had greater potential to cause permanent visual or cosmetic defect for rest of the life in the affected individuals and was a major cause of monocular blindness and visual impairment throughout the world, although little is known about its epidemiology or associated visual

Table 3: Non-traumatic Ocular Emergencies (n = 1603)

Clinical Diagnosis	No. of Cases n (%)
Corneal ulcer	341 (21.27)
Acute glaucomas	311 (19.4)
Orbit / Adnexa	224 (13.97)
Endophthalmitis	146 (9.11)
Conjunctivitis	169 (10.54)
Painful blind eye	63 (3.93)
Uveitis	148 (9.23)
Vitreoretinal	78 (4.86)
Neuroophthalmology	85 (5.25)
Miscellaneous	39 (2.43)
Total	1603 (100)

Table 4: Traumatic Ocular Emergencies (n = 4071)

Clinical Diagnosis	No. of Cases n (%)
Extra-ocular foreign body	1684 (41.36)
Lid injuries	644 (15.82)
Open globe injuries	1004 (24.66)
Closed globe injuries	421 (10.34)
Chemical injuries	249 (6.12)
Intra-ocular foreign body	69 (1.69)
Miscellaneous	10 (0.25)
Total	4071 (100)

Table 5: Distribution of sites of open globe injury (n = 1004)

Site of Open Globe Injury	No. of Cases n (%)
Cornea	632 (62.94)
Sclero-corneal injunction with uveal prolapse	223 (22.21)
Sclero-corneal junction without uveal prolapse	103 (10.25)
Sclera	46 (4.58)

outcome in developing countries⁸. Khattak et al reported that trauma as a common cause of unilateral blindness⁹. A national population based survey of blindness in Nepal found a blindness prevalence rate of 0.8% and trauma was responsible for 7.9% of monocular blindness¹⁰. In our study majority of the patients belonged to 2nd-3rd decades, in which 2/3rd of the total patients were males in the traumatic group. This finding correlates with the finding of Al-Rajhi, et al, they reported that 77% of ocular trauma occurred in males¹¹.

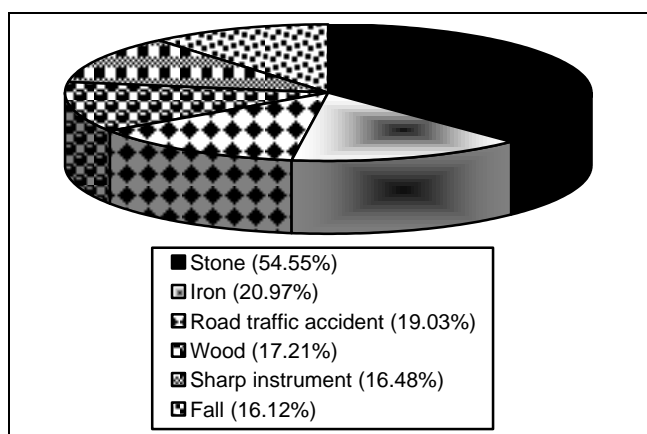


Fig. 2: Showing sources of accidental Traumatic open globe injury (n = 825)

In the present study commonest site of lodgment of extra-ocular foreign body was cornea. Iron was the commonest foreign body followed by sand and agricultural matter in order of decreasing incidence. In traumatic open globe injury cornea was the most common affected part of eye followed by Sclera-corneal rupture with uveal – prolapse. Asaminew T et al reported that cornea was the most common affected part of the eye i.e. 63.2%, cornea – scleral injury 14.8%, and uveal – prolapse or damage were 8.9%¹². Accidental open globe rupture being the most common which is similar to the findings with Vats S et al, who reported that 87.1% episodes were due to accidents, 10.4% due to alleged assault, and 2.5% were self-inflicted¹³. We also found that hyphema was the most common presentation among the traumatic closed globe injury. According to Fasih U et al 22.2% of the patients presented with hyphema in their study¹⁴.

Chemical injuries, though relatively less frequent are very devastating to the eye. In our study it was not possible to classify the chemical induced injuries according to the nature of the chemicals because no

such documentation for such cases was available. Ramakrishnan et al has shown that accidental chemical injury at the work place is most common in the group of 19 – 30 years¹⁵.

Majority of the extra ocular foreign bodies were removed. Closed globe and chemical injuries were managed medically. In all cases of open globe injury, primary repair was done.

Valid estimation of the annual incidence of infective ulceration was difficult to obtain in most countries⁸. In our study we found that corneal ulcer was the most common non-traumatic ocular emergency. Gonzales CA et al reported that annual incidence of corneal ulcer in Madurai district, South India was 11.3 per 10,000 population¹⁶. Bacteria were the most common etiologic agent followed by virus and fungus. Iqbal A et al in their study reported that bacterial corneal ulcer were the most frequent causes i.e. 63.4% followed by fungal 21.2% and viral ulcer were 12.1%⁹. Bharathi MJ et al found that 32.77% were bacterial and 34.4% were fungal corneal ulcer in their study¹⁷. These findings also support our findings.

In all cases of non-traumatic ocular emergencies, conservative medical management was given.

CONCLUSION

This study indicates that ocular trauma is a significant cause of mono-ocular and sometimes bi-ocular visual loss in all age groups. Many injuries and their visual outcome may be prevented through education and prompt, appropriate medical care. Health education and safety strategies can prevent most serious ocular emergencies both at home and place of work. The incidence of occupational ocular injuries can be reduced by mandatory use of protective goggles and alcohol free environment at work place.

Majority of the non-traumatic ocular emergencies were corneal ulcers, mostly due to bacterial etiology. This indicates that public health awareness about ocular hygiene and early intervention of all cases of red eyes can considerably reduce the burden of non-traumatic ocular emergencies.

A 5 year retrospective clinical audit of ocular emergencies in a rural hospital will definitely enable future health managers and clinicians to formulate comprehensive strategies for prevention and management of ocular emergencies both at the level of communities as well as health care delivery units.

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