



One Year Retrospective Observational Study of Ocular Emergencies in Rural Indian Population

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ABSTRACT

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

Material and Methods: This retrospective clinical observational study was conducted over a period of a year from 1st July 2017 to 1st July 2018 at the department of Ophthalmology, from various Central and East Indian Rural Hospitals. A comprehensive review of the record available for ocular emergencies was carried out.

Results and interpretation: Total 1556 patients were attended admitted in the Ophthalmology emergency. Male and female were 976 and 680 respectively. Male: Female ratio was 1.43:1 Traumatic ocular emergencies were 1138(73.13%) and non-traumatic ocular emergencies were 418 (26.86%). Most common cause of traumatic ocular emergency was extra-ocular foreign body 478 (42%) followed by Open globe injury 275 (24.22%). In traumatic ocular emergencies male and female Were 752(67%) and 386(33%) respectively. Most common presented age group was third and fourth decade. Among the open globe injury (n=27) 24.22% episodes were due to accidents. Common source of open globe injury was due to stone 54.55%. Corneal ulcer 92 (22%) and acute glaucomas 80(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.

Conclusion: 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.

Keywords: acute glaucoma, blindness, ocular emergency, open globe injury, work related eye injury.

INTRODUCTION

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 mostly between 25 – 44 years of age 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 keratitis.^{5,6}

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 rural region no recent data is available. A five year retrospective clinical audit from 1st July 2016 to 1st July 2018 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 data was collected from the department of ophthalmology from various Central and East Indian Rural Hospitals from 1st July 2017 to 1st July 2018.

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. All data obtained in the study were recorded and analyzed using the Statistical Package for Social Sciences for Windows, Version 21. Numerical variables were given as mean and standard deviation (SD), while categorical variables were given as frequencies (*n*) and percentages.

Patients were grouped 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. The most common traumatic ocular emergency was extra-ocular foreign body 478 (42%) followed by open globe injury 275 (24.22%). In traumatic ocular emergency male and female were 3,044 (74.77%) and 1027 (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 1125 (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%). (Table 5) Most common site of open globe injury was cornea 164(59.56%) followed by sclera-corneal junction with uveal prolapse 223 (23.45%) . (Table 5) Among closed globe injury cases 124 (11.12%) hyphema 214 (50.83%) was the most common presentation. Corneal ulcer 92(22%) and acute glaucomas 80 (19.3%) were the leading causes of non-traumatic group. Bacterial etiology (58.06%) was the most common cause followed by viral (27.56%).

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 in a particular area or whole country. Ocular emergency cases remain the serious clinical problem and if not managed properly it could be sight threatening. Ocular injuries are an important world-wide cause of visual loss, for playing a major role in society; adult males are frequently victimized^{1, 5}. Similarly, in our research, most of the patients were male, no matter in the open-globe injury group or closed-globe injury group. However, consistent with the previous clinical studies^{6, 7}, in both groups the most victims were all in 18-50 age range. Our study represented data from 0 to very old age group.

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 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 males.^{9,11}

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 study.¹⁴

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.

Despite advances in diagnostic and therapeutic methods, the final BCVA of open-globe injuries remains very poor, and enucleation rate (22.26%) is similar to the previous reported series, 22% by Esmaeli and 21% by Pieramici.^{12,13}

For most of the open-globe injuries are severe, no matter the final BCVA is better than 0.5 or 0.1, it has a significantly lower rate than closed-globe injuries. The rupture of eyeball often brings bad final BCVA, in the ocular trauma score (OTS) described by Kuhn and associates [14]. It is the first negative factor of visual prognosis. Actually, the visual outcomes of most of eye injury patients in this study were poor. In any groups, work-related injury and non-work-related injury, or open-globe injury and closed-globe injury, half of injured eyes ended with visual acuity worse than 0.1. China is one of the largest developing countries in the world.^{21, 24, 27}

The ocular trauma is a major problem in it during the process of development. For most of the victims were male, it would not only affect the family support and would cause a serious burden to the society. Even therapeutic methods make a great progress in recent years; in most situations the visual outcomes are poor. So the best way to treat ocular trauma is prevention¹⁵. The public should be educated and made more aware of the common causes of eye injury like firework, flying materials, especially metal and stone. When people play or work with them, the protective device should be worn. And more emphasis should be put on investigating the more comfortable and effective safety devices^{23, 27, 29}

CONCLUSION

Work-related eye injuries (WREI) not only constitute an important etiological entity for vision loss, but also account for a substantial part of occupational injuries. These injuries can lead to severe consequences and enormous financial losses. Employees of most of the every sector have the risk of eye injuries¹. When compared to the developed countries, the incidence and severity of WREI is higher in developing countries².

This study indicated that ocular trauma is a significant cause of mono-ocular and sometimes binocular 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 unit

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TABLES

Table 1: age and gender distribution of traumatic group.

Age distribution years	n (male) %	n (female)%
0-19	196(17.22%)	82(7.2%)
20-39	251(22.11%)	118(10.4%)
40-59	126(11.13%)	114(10.02%)
60 years onwards	196(17.31%)	72(6.33%)
Total	752(67%)	386(33%)

Table 1: age and gender distribution of non-traumatic group.

Age distribution years	n (male) %	n (female)%
0-19	73(17.6%)	45(10.8%)
20-39	77(18.5%)	48(11.4%)
40-59	55(13.23%)	42(10.32%)
60 years onwards	36(8.65%)	41(9.33%)
Total	242(58%)	176(42%)

Table 3: non traumatic ocular emergencies

Clinical diagnosis	Number of cases n (%)
Corneal ulcer	92(22%)
Acute glaucoma	80(19.3%)
Orbit / adnexa	59(14.2%)
Endophthalmitis	42(10.11%)
Conjunctivitis	46(11.11%)
Painful blind eye	168(4.02%)
uveitis	40(9.5%)
Vitreo retinal	176(4.22%)
neuroophthalmology	198(4.75%)
Miscellaneous	125(3%)
Total	418(100%)

Table 4: traumatic ocular emergencies

Clinical diagnosis	Number of cases n (%)
Extra ocular foreign bodies	478(42%)
Lid injuries	149(13.08%)
Open globe injuries	275(24.22%)
Closed globe injuries	126(11.12%)
Chemical injuries	69(6.08%)
Intra ocular foreign bodies	61(0.63%)
Miscellaneous	49(0.43%)
Total	1138(100%)

Table 5: distribution of sites of open globe injury

Site of open globe injuries	Number of cases n (%)
Cornea	164(59.56%)
Sclera- corneal injuction with uveal prolapse	64(23.45%)
Sclera- corneal injuction without uveal prolapse	34(12.32%)
Sclera	16(6%)