Original Article

Admitted Ocular Emergencies: A Four Year Review

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Purpose: To acquaint the ophthalmologists and related health professionals about the magnitude of admitted ocular emergencies (OE) for better prevention and management.

Material and Methods: This study was conducted over a period of 4 years from 1st January 2000 to 31st December 2003 at the Department of Ophthalmology, Khyber Institute of Ophthalmic Medical Sciences, Lady Reading Hospital, Peshawar, Pakistan. A comprehensive review of the computer record available for admitted ocular emergencies was carried out.

Results: Total admissions during the study period were 13807. Total admitted ocular emergencies (OE) were 2789 i.e 20.2% of the total admission. Male to female ratio was 2:1. Non-traumatic OE were 53.0% while traumatic OE were 47.0%. In non-traumatic group males were 59.9% while females were 40.1%. In traumatic group males were 74.2% and females were 25.8%. In non-traumatic group almost 2/3 of the patients were of 40 years and above age group while in traumatic group more than half of the patients were less than 20 years of age. Corneal ulcers (39.8%) and acute glaucomas (23.3%) were the leading causes of the non-traumatic group while open globe injuries (OGI) (71.9%) were leading the list of traumatic OE. Total surgical procedures performed for ocular emergencies were 1988 i.e 16.0% of the total major ophthalmic surgeries. Average stay in the hospital for non-traumatic OE was 6.6 days, whereas, for the traumatic OE was 5.5 days.

Conclusions: OE formed significant proportion of total ophthalmic admissions. Traumatic OE were almost equal to non-traumatic OE. Male were affected more commonly specially in traumatic group. Average hospital stay for OE was longer than routine admissions. Most of OE needed surgical intervention for proper management.

The health professionals and especially the ophthalmologists are frequently encountered by ocular emergencies, both traumatic and non-traumatic. Most of the times they are difficult to manage and are associated with high risk of complications. They usually require prolonged admissions for proper management. It has been reported that 5-16% of all admissions in eye hospitals are trauma related[1]. Ocular trauma victims are predominantly male, young[2] and have a potential risk of blindness. The nonexistence or inadequacy of safety measures at home, workplace in sports, lack of adequate eye care facilities, delay in presentation and the use of traditional medicine are some of the important factors responsible for such poor outcome of ocular trauma in developing countries. It has been

reported that 5% of blindness in the developing countries is trauma related[3].

Blindness has profound human and socio-economic consequences in all societies. The costs of lost productivity, rehabilitation and education of the blind are a significant economic burden. Furthermore, in such settings blindness is often associated with lower life expectancy. The global magnitude of blindness is estimated at 50 million and is expected to increase to 75 million by the year 2020[4]. Almost 80% of global blindness is avoidable and 90% blind people live in developing countries[5].

Vision 2020, a global initiative by the World Health Organization, non-government organizations and others, aim to eliminate avoidable blindness by the year 2020 through coordinated strategies aimed at the primary causes of blindness. Information about OE especially the non-traumatic is very limited. We conducted this study with the objective to acquaint the ophthalmologists and health authorities about the magnitude of admitted OE for better prevention and management.

MATERIAL AND METHODS

It was a retrospective, descriptive study carried out at Department of Ophthalmology, Khyber Institute of Ophthalmic Medical Sciences (KIOMS), Lady Reading Hospital, Peshawar, Pakistan from 1st January 2000 to 31st December 2003. A comprehensive review of the clinical data available in the "GOLDEN EYE" for admitted OE was carried out. Golden Eye is an access based software in which relevant data of every indoor and outdoor patient who attends the Department of Ophthalmology, Lady Reading Hospital is entered and can be reviewed and analyzed whenever needed.

All the patients who were admitted as OE over the study period were included in the study. Ocular emergencies were grouped into traumatic and non-traumatic and frequency of various conditions was noted. Age and sex distribution was studied among both the groups. Surgical procedures performed for OE were noted. Hospital stay of both the groups was evaluated.

RESULTS

Total admissions during the study period were 13807 whereas total admitted OE were 2789 i.e 20.2% of the total admissions. Males were 1858(66.6%) while females were 931 (33.4%). Non-traumatic OE were 1478 (53%). Males were 885 (59.9%) while females were 593 (40.1%). Traumatic OE were 1311 (47%). Males were 973 (74.2%) and females were 338 (25.8%). Age and sex distribution of non-traumatic and traumatic groups is shown in (Table 1, 2) respectively. (Table 3-5) shows the frequencies of non-traumatic and traumatic OE respectively.

Table 1: Age and Sex Distribution of Non-Traumatic Group (n=1478)

Age Distribution	Male n (%)	Female n (%)
0-19 Year	184 (12.5)	103 (7)
20-39 Year	169 (11.4)	65 (4.4)
40-59 Year	209 (14.1)	155 (10.5)
60 and above	323 (21.95)	270 (18.3)
Total	**885 (59.9)**	**593 (40.1)**

Table 2: Age and Sex Distribution of Traumatic Group (n = 1311)

Age Distribution	Male n (%)	Female n (%)
0-19 Year	545 (41.6)	220 (16.8)
20-39 Year	259 (19.8)	47 (3.6)
40-59 Year	91 (7)	33 (2.5)
60 and above	78 (6)	38 (2.9)
Total	**973 (74.2)**	**338 (25.8)**

Among non-traumatic OE, corneal ulcers 588 (39.8%) and acute glaucomas 344 (23.3%) were the leading causes. Frequency of various causes of corneal ulcers is shown in (Fig 1). Total surgical procedures performed for OE were 1988 which is 16% of the total admitted major ophthalmic surgeries performed during the study period. Surgical intervention was required in 71.2% of admitted OE. Different surgical procedures performed for OE are shown in (Table 5). Conjunctival flaps were done for different corneal ulcers. Out of 373 cases of bacterial corneal ulcers, 122 (32.7%) needed conjunctival flap. 39 (31.2%) of fungal

ulcers had conjunctival flap while 5 (7.9%) of viral ulcers needed conjunctival flap and 6 (37.5%) cases of other corneal ulcers needed conjunctival flap. Different OE that needed evisceration/enucleation are shown in (Fig 2).

Average hospital stay for OE was 6.05 days. Non-traumatic OE had an average stay of 6.6 days whereas traumatic OE had 5.5 days, while for routine cases it was 2.3 days. Average hospital stay for various non-traumatic and traumatic OE is given in table 6 and 7 respectively.

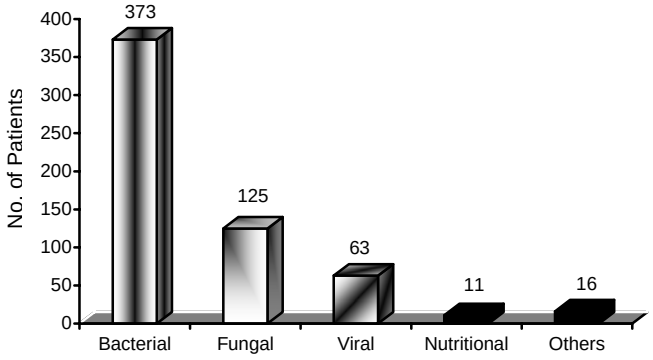

Fig. 1: Causes of corneal ulcers (n=588)

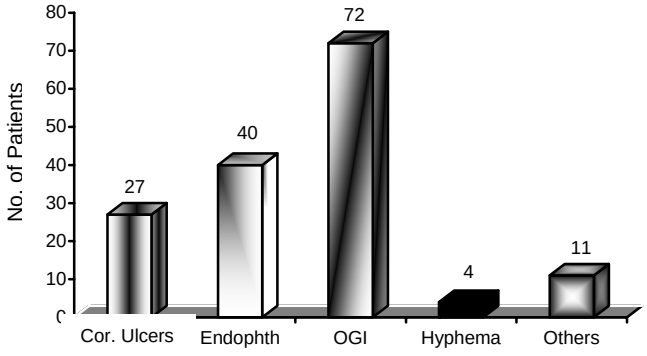

Fig. 2: Evisceration/Enucleation for ocular emergencies (n=154)

DISCUSSION

An enormous share of the workload of health professionals especially ophthalmologists and institutions is constituted by ocular emergencies. In our study 1/5th of the patients were admitted as ocular emergencies. Almost similar ratio has been reported earlier[6]. Traumatic and non-traumatic OE had almost equal share.

In our study almost 2/3rd of the patients of non-traumatic OE were of 40 years or older. This could he explained that certain diseases of older age groups present as OE, such as lens induced glaucoma (LIG) and angle closure glaucoma (ACG). Male predominance (59.87%) was seen in non-traumatic group.

Table 3: Non-traumatic Ocular Emergencies (n = 1478)

Disease	No. of Patients n (%)
Corneal Ulcers	588(39.8)
Acute Glaucomas	344 (23.3)
Vitreoretinal	164 (11.1)
Endophthalmitis	158 (10.7)
Orbit/Adnexa	106 (7.2)
Neurophthalmology	55 (3.7)
Uveitis	43 (2.9)
Miscellaneous	20 (1.4)

Table 4: Traumatic Ocular Emergencies (n = 1311)

Disease	No. of Patients n (%)
Open Globe Injuries	942 (71.9)
IOFB	56 (4.3)
Traumatic Hyphema	238 (18.2)
Chemical/Thermal Injuries	46 (3.5)
Miscellaneous	29 (2.2)

Corneal ulcers were the most frequent cause of non-traumatic OE. Valid estimates of the annual incidence of infective ulceration are difficult to obtain in most countries. However, available data indicate that, while in the USA there are 11 corneal ulcers per 100,000 population annually[7], in India the number is 10 times higher with 113 per 100,000 population per year[8]. By conservative estimates corneal ulcers blind at least 1.5 million eyes every year in the world, and the true number may be several times greater[9]. Recent evidence suggests, however, that primary corneal

ulceration is a much more common event than was previously recognized and that it is a major cause of corneal scarring and visual loss in developing countries[10]. It has been reported that corneal opacity is the second leading cause of blindness in Thailand[11]. In our study bacterial corneal ulcers (63.5%) were the most frequent type followed by fungal (21.2%). The less number of viral ulcers (10.7%) was probably because most of them are treated as out patients. Naseem et al in their study have reported that among corneal ulcers, 16.5% were fungal[12]. Conjunctival flaps were needed to manage corneal ulcers in 29.3% cases while 4.6% of the eyes with corneal ulcers were eviscerated.

Table 5: Surgical Procedures for Ocualr Emergencies (n = 1988)

Surgery	No. of Patients n (%)
Repair ± IOFB Removal	857 (43.1)
Conjunctival Flap	172 (8.7)
Cataract Extraction ± IOL	168 (8.5)
Evisceration/ Enucleation	154 (7.8)
Trabeculectomy	145 (7.3)
Conventional R/D Surgery	98 (5)
A .C Wash	66 (3.3)
Surgical PI	35 (1.8)
Others	293 (14.7)

RD= Retinal Detachment
PI= Peripheral Iridectomy

Table 6: Hospital Stay in Days (Non-traumatic Group)

Disease	No of Days
Corneal Ulcers	10.0
Acute Glaucomas	5.5
Vitreoretina	5.0
Endophthalmitis	10.0
Orbit/Adnexa	6.5
Neurophthalmology	5.0
Uveitis	6.0
Miscellaneous	5.0

In our study, we found that 23.3% cases in the non-traumatic group were admitted with acute glaucomas (LIG and ACG) and was the second frequent cause following corneal ulcers among the non-traumatic group. Wajid and Khan in their study have reported that 5% of their cases with irreversible blindness were due to primary angle closure glaucoma[13].

Only 2.9% cases of non-traumatic group comprised of uveitis which is 0.3% of the total admissions during the study period. It has been reported previously that 0.8% of the admissions were of uveitis[14].

Table 7: Hospital Stay in Days (Traumatic Group)

Disease	No. of Days
Open Globe Injuries	5.0
IOFB	5.5
Traumatic Hyphema	5.0
Chemical/Thermal Injuries	8.0
Miscellaneous	4.0

Almost half of the total admitted ocular emergencies were trauma related. Mostly preventable by the use of suitable eye protection, trauma is a common cause of ocular morbidity. Damage may be immediately apparent or may develop after the injury as a secondary complication. Ocular trauma has greater potential to cause permanent visual or cosmetic defect for the rest of the life in the affected individuals and is a major cause of monocular blindness and visual impairment through out the world, although little is known about its epidemiology or associated visual outcome in developing

countries[15]. Khattak et al have also reported trauma as a common cause of unilateral blindness[16]. 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 blindness[17]. In our study 9.5% of the ophthalmic admissions were due to ocular trauma compared to 12.9% reported by Khan et al[18].

In traumatic group 58.2% of the patients were less than 20 years of age, in which the number of male patients were more than double of the female patients. This predominance of young male patients in traumatic group has been reported by many authors in national and international studies. Al-Rajhi, et al observed that 77% of ocular trauma occurred in males[20]. In another study it was found that male to female ratio is usually greater than 4:1 for acquired trauma related blindness in children[21]. Impaired vision from birth or in early childhood can have a profound impact on infant's or child development, restricting participation in social, physical educational and later employment opportunities[22]. Children are particularly vulnerable because of lack of awareness and inability to protect themselves.

Among the traumatic cases, OGI with or without IOFB were 76.1% in our study which is in contrast to that reported by earlier studies[23], where described blunt objects related trauma is the most common source of eye injury. After OGI the second common cause of traumatic OE was traumatic hyphema due to blunt trauma i-e 18.2%. According to Fasih et al, 22.2% of the patients presented with hyphema in their study[24]. Islam et al have reported stone as the commonest source of blunt trauma[25]. However, Jan et al in their study have reported cricket ball as the most common cause of blunt trauma and reported hyphema as a cause of legal blindness in 19.4% of the affected eyes in their study[26].

Chemical and thermal injuries, though relatively less frequent are still very devastating to eye. In our study 3.5% patients presented with chemical or thermal injuries, compared to 5.6% as reported by Fasih et al[24]. The management of ocular surface disorders particularly ocular burns has been a challenging condition for years for the ophthalmologists. Even under favourable circumstances, visual performance is disturbed by ocular surface scarring, vascularization, persistent epithelial defects and associated dry eye in most cases of ocular burns[27].

10.7% of the patients were admitted for the management of endophthalmitis, which include both the post-operative endophthalmitis and traumatic endophthalmitis. It has been reported that endophthalmitis associated with trauma has a poorer prognosis than that associated with cataract extraction[28]. High compressive and concussive forces, as well as heavy body injuries with multiple organ involvement can make an eye vulnerable to infection[29]. Post traumatic endophthalmitis is a catastrophic complication of penetrating ocular trauma. It has been shown that the microbiology of traumatic endophthalmitis is distinct from other subgroups of exogenous endophthalmitis[30, 31]. The risk factors for the development of endophthalmitis in the setting of trauma are the presence of an IOFB, delay in primary repair, disruption of the crystalline lens and a rural setting[35]. Brinton et al reported increased incidence of endopthalmitis in eyes with IOFB (10.7%) compared to in eyes without IOFB (5.2%)[33]. Complications of post-operative endophthalmitis may also be devastating. It has been reported that despite appropriate therapy post-operative endophthalmitis results in severe visual loss in at least 30% patients and retinal detachment in 8-10% of patients [34].

Evisceration and enucleation were performed for 7.8% of OE. OGI (46.8%) was the commonest indication followed by endophthalmitis (26%). The relative frequencies of the indications for the procedures are almost similar to as that reported by Babar et al [35]. Average stay in the hospital for OE was almost double of the routine admissions. Non-traumatic OE had a longer stay than the traumatic OE as corneal ulcers and endophthalmitis needed prolonged hospitalization.

CONCLUSIONS

OE contributes heavily to the workload of health care centers and professionals as almost 1/5th of the total admissions were admitted as OE and young men were more at risk for severe OE. The work load, expenses, morbidity and permanent visual, cosmetic or physiological impact of OE should not be under estimated. Primary prevention is the key to the solution of the problem as secondary and tertiary prevention could not achieve what the primary prevention can.

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