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Etiology and Presentation of Ocular Trauma at District Head Quarter Teaching Hospital Bannu

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Abstract

Purpose: To study the clinical presentation and etiology of ocular trauma so as to plan resources accordingly.
Material and Methods: This prospective observational descriptive study which included two thousand seven hundred and ten patients was conducted at the Department of Ophthalmology DHQTH, Bannu from 1st Jan 2015 to 31st Dec 2016.
RESULTS: Total 2710 patients with trauma were attended in this two-year period. Male and females were 1316(48.56%) and 1125(41.51%) respectively, while children comprised of 269 cases (9.93%).Closed globe injuries were more prevalent with 1025 patients (37.82%) followed by open globe injuries which were 870 patients (32.10%) and chemical injuries comprised of 815 patients(30.07%).The most common place of injury was home ,877patients,(32.36%), followed by assault, 864 patients (31.88%).The causative agent in most cases was burns, 408 patients(15.05%) followed by stones 365 patients (13.46%). 815 patients had chemical injuries.
Conclusions: Increased public health awareness should be created which will prevent inadvertent incidences of ocular emergencies in the community.
Keywords: Ocular Trauma; Open Globe; Closed Globe; Chemical Injury.

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Introduction

Eyes are the 3rd most common organ affected by injuries after hands and feet despite the fact that they represent only 0.27%of the total body surface area and 4%of the facial area[1].According to one study about half a million of people go blind worldwide as a result of ocular trauma[2].More than 2.4million injuries occur each year[3].

Ocular trauma is the most common cause of unilateral blindness worldwide[4]and it is one of the leading causes of preventable blindness in the world today[5].

Ocular trauma is broadly classified into open globe, closed globe and chemical injuries. Ocular injuries with sticks, stones, cricket ball and metallic objects along with road traffic accidents are the most common[6]and the etiology can be classified into domestic, occupational, sports, road traffic accidents, iatrogenic, fights, assaults and war injuries.

Many eye injuries are related to a particular occupation and certain culture[7].

Chemical injury to the eye may vary in severity from mild irritation to complete destruction of the ocular surface epithelium, corneal opacification, loss of vision and rarely loss of eye. Alkali injuries are usually more severe than acid injuries because they penetrate deeper, while acids tending to remain confined to the ocular surface and produces superficial damage. Regarding ocular chemical burns the conventional medical methods have met with only a limited success and thus it remains one of the challenging entities facing the clinician today[8].

We conducted this study to help us in documenting this preventable cause of blindness.

Authorship Contribution: [1]Data Collection, Data Analysis, References & Manuscript Writing, [2]Literature Research, Topic Selection & Supervision

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Materials and Methods

This two year prospective observational descriptive study was conducted at the Department of Ophthalmology, DHQ Teaching Hospital, Bannu, from 1st January 2015 to 31st December 2016.All patients presenting with trauma to the emergency department and out patients of DHQTH were included in the study. Excluded from the study were those with previous trauma and co -morbidity.

All patients underwent thorough ocular examination including visual acuity measurement, pupillary reactions, intraocular pressure measurement, slit lamp examination of both anterior and posterior segments examination and other relevant investigations such as B-Scan and indirect ophthalmoscopy, CT-Scan and X-Rays when deemed necessary and possible.

Patients were managed at casualty and OPD and those requiring surgeries were managed and referred to subsequent sub-specialties

The Birmingham Eye Trauma Terminology (BETT) was used to classify the main types of ocular trauma into open globe and closed globe injuries.

Chemical injuries were graded according to Hughes classification.

Results

Total of 2710 patients were included in the study. The Birmingham Eye Trauma Terminology (BETT) was used to classify ocular trauma into open globe and closed globe injuries besides chemical injuries which were included under a separate heading.

Table 1. Demographics

Gender	Frequency	%Age
Male	1316	48.56%
Female	1125	41.51%
Children	269	9.93%

Out of the 2710 patients, closed globe injuries, accounting for 1025 cases (37.82%) were the most common, followed by open globe injuries comprising of 870 patients (32.10%), which included 323 (37.12%) who had intraocular foreign body (IOFB). Cases of Chemical injuries were 817(30.07%).

Table 2. Types and Frequency of Ocular Emergencies.

Type Of Trauma	Frequency	%Age
1.Closed Globe	1025	37.82%
2.Open Globe	870	32.10%
2.1. Ogi Without Iofb	547	(11.91%)
2.2. Ogi With Iofb	323	(20.19%)
3.Chemical Injuries	815	30.07%

Table 3. Distribution of Trauma Based on Place of Injury

Place Of Injury	Frequency	%Age
1.Home	877	32.36%
2.Assault	864	31.88%
3.Work Place	695	25.65%
4.Rta	156	5.75%
5.Sports	118	4.35%

Out of the 2710 patients 877 patients (32.36%) had sustained some type of ocular trauma at home, 864 (31.88%) assaults, 695 (25.65%) work place,156 patients (5.75%) RTA and 118 (4.35%) sports.

Table 4. Distribution Based on The Type of Causative Agent.

Type	Distribution	%Age
1.Burns	408	15.05%
2.Stones	365	13.46%
3.Iron Rod	328	12.12%
4.Needle	307	11.33%
5.Knife	295	10.89%
6.Ball	265	9.78%
7.Fist	258	9.52%
8.Animal Horn/Bird Beak	210	7.75%
9.Pellets	190	7.01%
10.Non Specific	84	3.09%

The causative agent were burns in 408 patients (15.05%), stones in 365 patients (1346%), iron rod 328 patients (12.12%), needles in 307(11.33%), knife in 295 (10.89%), ball in 258 (9.52%), fist in 265(9.78%), animal horns /bird beak in 210 patients (7.75%) and pallets in 190 patients (7.05%). However, in about 84 patients (3.09%) no specific causative agent could be established.

Table 5. Grading Of Chemical Injuries (Hughes Classification)

Grade	No.Of Patients	%Age
1.Grade1/2	359	44.04%
2.Grade 3	236	28.97%
3.Grade4	220	26.99%

Chemical injuries comprised about 30.07% out of the total trauma patients in our study. They were further graded according to Hughes classification.

Grade1/Grade 2 injuries were the most common, comprising of 359(44.04%) patients. Grade 3 and Grade 4 included 236(28.97%) and 220 (26.99%) patients respectively.

Discussion

Ocular trauma is an important and preventable cause of ocular morbidity[9]

In our study males (48.56%) were affected by trauma more commonly than females (41.51%). This may be because males are involved in outdoor activities more often than females and particular in our setup with a male dominant society.

However, this male preponderance is also reported in other studies both nationally and internationally. Jana S, et al[10]reported a male female ratio of 1.97:1 which is identical to our study of 1.17:1. Other studies conducted by Jehangir et al[11], Bukhari et, al[12,] Agarwal et al[13], Thompson et al[14], Khatry et al[15], Guly et al[16] and El-Mekaway et al[17]reveal results similar to our study.

In our study, closed globe injuries (37.82%) were more common than open globe (32.10%) and chemical injuries were the least common (30.07%). different studies show different results Sukati et al[18] reported open globe injuries (56.1%) to be more common than closed globe injuries (43.9%). similarly, Senguptaet al[19] reported closed globe injuries (72.2%) as the commonest type of injuries in his study.

The differences in results of studies conducted by different authors may be attributed to the difference in lifestyle and working environment.

In our study chemical injuries comprised 30.07% of all ocular injuries. Jana etal[10] reported chemical injuries to be 6.12%. similarly, Maurya et al[20] reported chemical injuries accounting for 11.44%, while Singh et al[21] found chemical injuries to be responsible for 7.7 -18% of the ocular injuries. Our study shows that most of the chemical injuries were sustained at home due battery explosion.

Study conducted by Chattopadhyay et al[22] also reveals that the home remains an important and common place for ocular injuries. On the other hand, Gupta et al[23] has documented workplace as the most common for chemical injuries.

In our study burns were the most frequent (15.05%) followed by stones (13.46%) and iron rod (12.12%) as the causative agent. In the study carried out by Meller et al[24] only 23% had thermal and 77% had chemical burns. A study conducted by Nadeem et al[25] shows that the commonest implicated agents were stones and wooden sticks.

Conclusions

Awareness about ocular trauma and its prevention is vitally important. Increased public health awareness regarding ocular trauma will be of significant help to prevent inadvertent incidences of ocular emergencies in the community. 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 at place of work.

This study will provide the impetus for further studies which will help to formulate comprehensive strategies for prevention of ocular emergencies both at the level of communities as well as health care providers.

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