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A Clinical Study of Ocular and Periocular Injuries in Blunt Ocular Trauma in Prakash Institute of Medical Sciences and Research, Urun - Islampur (Maharashtra)

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Abstract: ***Purpose: To analyse ocular injuries because of blunt ocular trauma with respect to mode of injury, type of ocular injury, anatomical structures involved and outcome. Materials and Methods: This was a retrospective study of 30 patients with 35 eyes involved in blunt ocular and periocular trauma from April 2016 to March 2017 in Prakash Institute of Medical sciences and research, urun - Islampur, Maharashtra. Result: Road traffic accident was found as the most common mode of injury in all of these blunt ocular trauma patients we studied (n= 30). In our study we found accidents involving two wheeler vehicle are common. We saw ocular and periocular involvement in 35 eyes due to blunt ocular trauma in these 30 patients. 05 patients having bilateral ocular involvement (16.66%). 25 patients having mono-ocular involvement. (83.33%). Conclusion: Eye injuries related with road traffic accidents were noted in significant number of cases of blunt ocular trauma. Lids and eyebrows combined were the most affected structures involved in the blunt ocular trauma .Conjunctival injuries comes second in the list. The structures involved were related to mode of injury. and force of impact.. Ocular trauma is a major cause of preventable acquired monocular blindness and visual impairment in the world.***

Keywords: Blunt ocular Trauma, Lid laceration, Sub conjunctival haemorrhage, lens dislocation

1. Introduction

Sight is considered to be the most important of all the special senses. The loss of visual function due to trauma to eye and its adnexa is a great tragedy and in most instances is a preventable calamity. [1]. Injuries to the eyes are common. Many are minor but, if not treated quickly and appropriately, can lead to sight –threatening complications. The eyeball is well protected in the bony orbit and by the nose, the lids, eyebrows, eyelashes & good cushion of fat behind the eyeball. But even it can get injured. Eyes represent only 0.27% of the body surface area and 4% of the facial area. They are the third most commonly trauma-exposed area after the hands and feet.[2]. The incidence of injury to the eye is high in the industrial areas. Sources of eye injury can be trauma because of Blunt objects – like –stones, rocks, fists,tree branches, champagne corks or at Motor Vehicle accidents –(RTA), at play or sports because of trauma by cricket ball .shuttle cock injury, gilli- danda play, collision by shoulder/elbow, accidental falls in home/ on roads. Blunt trauma involves receiving a direct blow to the eye from an object or apparatus that does not penetrate into the eye. The blunt trauma causes ocular damage by coup and countercoup mechanism or by ocular compression. The eyeball is in a closed cavity. The volume of it cannot be changed so, when there is a compression along its antero - posterior axis, there is elongation of the equatorial area. The rapid deformation of ocular tissues can cause damage to anterior and posterior segment. Cornea,iris, lens and zonules are the most affected tissues from such trauma. [3]

Injuries to globe can be described as closed globe injuries when the eye wall is intact and open globe injuries when the eye wall has been breached. [4] Blunt trauma to eye causes contusion injuries which may vary in severity from a simple corneal abrasion to extensive rupture of globe, eyelid Lesion, conjunctival lesion, lacrimal apparatus lesion, optic nerve injuries and orbital injuries .Most of the cases of ocular trauma may not lead to loss of vision all time,but can cause significant morbidity .Early detection and management is the key to trauma management and prevention of further complications. Prevention is always better than cure. Creating awareness about ocular trauma and taking preventive measures would result in a great decrease in ocular morbidity.

2. Materials and Methods

Inclusion Criteria of the study– All patients males, females of all age groups having blunt ocular trauma attending emergency services and OPD services at PIMS.

Exclusion Criteria of the study – All patients having penetrating and/or perforating injuries of globe.

This was a retrospective study of 30 patients with blunt ocular trauma to 35 eyes from April 2016 to march 2017 in Prakash Institute of Medical sciences and research, Urun-Islampur, Maharashtra. Patient data consisting of Name, Age, Sex, Mode of injury, Structures involved in the ocular trauma, management and outcome was noted and analysed.
Detailed History as much as possible was gathered about mechanism of injury, time and nature of injury .Common symptoms at presentation in emergency room were noted like swelling around eyes, pain, redness of eye/eyes, blurring of vision,diminution of vision ,watering of eyes,bleeding, etc .Past ocular history Previous visual acuity, whether he / she was wearing a spectacle, if any,or not at the time of trauma and ? FB remaining, Medical

history about status of tetanus prophylaxis ? Anticoagulation treatment was noted.

Approach to eye examination was a Systematic Examination protocol .Diffuse torch illumination to examine face, ocular and periocular area..Then focal illumination of eyes .Examination of eyes with desmarre's lid retractors under surface anaesthesia with paracain (Proparacaine HCL 0.5 %)eye drops if required was done .Pupillary reactions to light were noted, ocular movements in all nine quadrant of gaze if possible were examined. Visual acuity documentation, – Slit lamp examination, Fundoscopy for retinal evaluation X-ray, CAT scan, b scan if and when required was advised .

Management according to the type and nature of injury, close follow up for visual acuity check up if need for referral or second opinion patient was referred to another ophthalmologist of sub –specialty at higher centre.

3. Results

Age and sex distribution of patients suffering from blunt trauma are given in table 1 and table 2 .Road traffic accident involving two wheelers in the accidents was found as the most common mode of injury to the patients in our study.30 patients with involvement of 35 eyes in blunt ocular trauma 05 patients having bilateral ocular involvement (16.66%). .25 patients having mono-ocular involvement. (83.33 %).

Table 1: Age distribution of patients presenting with blunt ocular trauma

Age in yrs	*No.of patients*	*% (percentage)*
11-20	03	10.00%
21-30	13	43.33%
31-40	06	20.00%
41-50	04	13.33 %
51-60	03	10.00 %
61-70	00	00
71-80	01	3.33 %
Total	30	100 %

Table 2: Sex distribution of patients presenting with blunt ocular traum.

Gender	No. of patients	Percentage
Male	25	83.33%
Female	5	16.67%
Total	30	100.00%

Table 3: Type of ocular injury in patients with blunt ocular trauma (30 patients, 35 eyes)

Anatomical structure involved in injury	Type of ocular injury	Number of Eyes
Eyebrows	Edema and ecchymoses laceration	07 (20%) 03 (8.57%)
Lids	Lid Laceration Edema and Ecchymoses	05 (14.28 %) 06 (17.14 %)
Conjunctiva	Sub Conjunvtival Haemorrhage Conjunctival tear	08 (22.85%) 02 (5.71%)
Cornea	Epithelial defect (Abrasion)	01 (2.85%)
Iris and Pupil	Traumatic mydriasis and spincter tears	01 (2.85 %)
Lens	Anterior dislocation	01 (2.85%)
Orbit	# lateral wall of orbit of Right eye	01 (2.85 %)
Total		35 eyes (100%)

Bilateral ocular involvement seen in 05 patients .30 patients 35 eyes involved.

Table 4: Aetiology of the trauma in the patients in the study of Blunt Ocular Trauma

Aetiology	*Source*	*No. of Patients*	*%*
Road Traffic accidents	4 wheeler 2 wheeler bicycle	04 24 01	13.33 % 80.0% 03.33 %
Assault		01	03.33 %
Total		30	100 %

Table 5: Visual Acuity recording at the time of first examination after blunt injury of the 30 patients (35 eyes) in this study of blunt ocular trauma

Visual acuity at first examination after blunt injury	No .of eyes (35 eyes)	Percentage (%)
6/6	27	77.14%
6/9—6/18	07	20 .0%
Perception of light only	01	2.85%

About 27 eyes (77.14%) were having 6/6 visual acuity .07 eyes were having 6/9-6/18 visual acuity at the time of first examination. Only 01 patient having anterior dislocation of crystalline lens was having only perception of light visual acuity recorded at first examination who was referred for super specialist opinion immediately after giving primary treatment.

4. Discussion

Ocular trauma has been a neglected problem. Blunt trauma to eye can affect any structure of eye. Blunt ocular trauma can cause both structural and functional damage to the eye. There are approximately 2.5 million new eye injuries in the United states each year [5] and the number in India is even more. Young males are more likely to have ocular injuries than females or older one. Blunt objects account for the largest percentage of eye injuries (30%) [6] Ocular trauma remains a preventable public health problem in the world with significant socio-economic impact. The World Health Organization (WHO) programme for the prevention of blindness research indicated that there are~55 million eye injuries/year that restrict activities for more than one day. Of these, 750 000 will require hospitalization (7). Ocular trauma is an important cause of acquired unilateral blindness, resulting in about 19 million cases of monocular blindness (7,8).

Males accounted for 80-84% of ocular trauma (8, 10, 11,12). This was similar to our study for the males. Males spend more time outdoors. . A blunt impact to eye may damage the eyebrows, eyelids, conjunctiva, sclera, cornea, iris, lens, retina and optic nerve. Blunt impact can cause contusion and lacerations. Road traffic injuries (RTI)-related ocular trauma constitute between 5% and 13% of all ocular trauma. [13] Bilateral ocular involvement seen in 05 patients. (16.66 %) Most studies of ocular contusion relate to specific sequelae- for example, traumatic hyphaema, anterior chamber angle

recession, concussion cataract, lens dislocation, blood staining of the cornea, and corneal endothelial changes.[8] Nature has provided a protective bony wall and lids to cover the eye to protect it from injury, hence eyelids are more prone for injuries .In our study lid edema and ecchymoses was present in 06 eyes (17.14%) . Oral antibiotics .analgesics and cold compresses were advised.lid lacerations in 05 eyes (16.66%) were treated with 6-0/7-0 black silk. Intramuscular injection of tetanus toxoid 0.5ml was given to all patients

Corneal and conjunctival damage may follow either focal or generalised concussional injury. Most lesions, such as subconjunctival haemorrhage, conjunctival oedema, or corneal epithelial abrasions, resolve without sequelae. Subconjunctival hemorrhage is caused by the rupture of small subconjunctival blood vessel. In our study, sub conjunctival haemorrhage was seen in 08 eyes (22.85 %). In 2 patients we saw a small conjunctival tear (5.71%) Treatment of subconjunctival hemorrhage consisted of reassurance and local cold compresses for 24 hours and lubricating eye drops Subconjunctival hemorrhages healed spontaneously in 2 to 4weeks.

In our study we saw tears of the pupillary margin characteristically involving the sphincter muscle, producing a traumatic mydriasis. (01 case)

The anterior dislocation of lens in a male patient of 25 years of age who presented to us after 1 week after blunt trauma to eye was referred to a higher centre for management. The fracture lateral wall of right orbit, another male patient was referred to facio-maxillary surgeon for further management.

In all 2 patients were not treated completely at our hospital.

Epidemiology allows one to determine causal patterns of injury and when analysed can reduce this preventative problem. It allows the information to set up policies and educational programmes to reduce ocular trauma; Policy changes with respect to eye protection, environmental controls and behavioural interventions have reduced eye injuries in the work place [14]. This has also occurred with the use of laminated windscreens, seat belts and bicycle helmets. As Kuhn said, prevention of an eye injury is preferable to the most effective treatment [15].Ninety percent of all eye injuries are preventable [16]

Table 6: Comparison of our study results with that of study by Pai SG [17]

Anatomical structure involved in injury	Type of ocular injury	Our study	Study by Pai SG
Lids	Lid Laceration Edema and Ecchymoses	14.28 % 17.14 %	31.2 % 62.5 %
Conjunctiva	Sub Conjunvtival Haemorrhage	22.85%	37.5%
Cornea	Epithelial defect (Abrasion)	2.85%	21.8%
Iris and Pupil	Traumatic mydriasis and sphincter tears	2.85 %	9.3 %
Lens	Anterior dislocation	2.85%	3.1 %
Orbit	# lateral wall of orbit of Right eye	2.85 %	6.25 %

Table 7: Comparison of results in our study with that of Elangovan Marudhamuthu [18]

		In Our study % of results	In the Study by Elogovan Marudhamuthu % of results
Sex Distribution in Ocular trauma patients	Males Females	83.33 % 16.66 %	85.33 % 14.67 %
Type of Vehicle in RTA causing blunt ocular trauma	2 wheeler 4 wheeler	80.00% 13.33 %	87.33 % 3.33 %

5. Conclusion

Blunt trauma forms a major part of ocular trauma. In our study majority of the patients were males, (83.33 %) and the commonest age of presentation was 33.5 yrs .Our study showed road traffic accident to be the commonest mode of blunt ocular injury (90 %). In that two wheeler accidents were more common. (80 %). The most commonly involved eye structure was lid and adnexa followed by conjunctiva . Anterior segment involvement included corneal epithelial defect (1 case) and anterior dislocation of lens (1case).

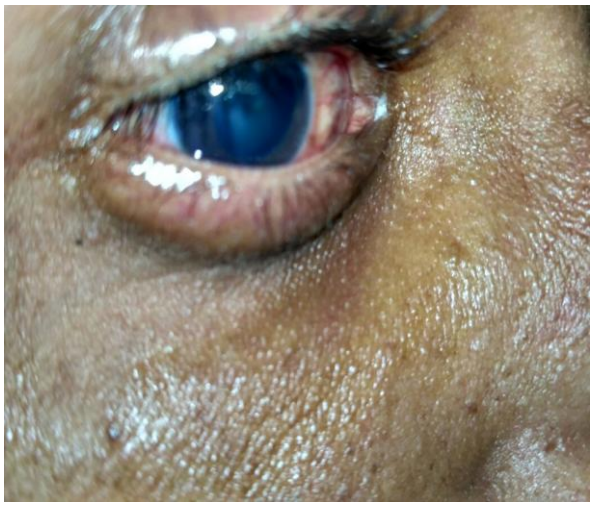
Strict implementation of traffic rules, use of helmets, health education and preventive strategies may help to decrease the occurrence of ocular injuries.

References

[1] Badrinath SS Ocular trauma ind j ophthalmol 1987:35:110-1
[2] Nordber E.injuries as apublic health problem in sub – saharan Africa :Epidemiology and prospects for control.East Afr med j.2000:77:1-43
[3] Firat PG, Doganay S, Cumurcu T, Demirel S, Kutukde D (2011) Anterior Segment Complications in Ocular Contusion. J Trauma Treatment 1:101. doi:10.4172/2167-1222.1000101
[4] International Journal of Research in Medical Sciences Bhupally AK et al. Int J Res Med Sci. 2015 Dec;3(12):3714-3719
[5] MacEwen CJ, Baines PS, Desai P. Eye injuries in children: the current picture. Br J Ophthalmol. 1999;83:93
[6] Horn E, McDonald HR, Johnson RN. Soccer ball-related retinal injuries. Retina. 2000;20:604
[7] Négrel AD, Thylefors B. The global impact of eye injuries. Ophthalmic Epidemiol 1998; **5:** 143-69.
[8] Thylefors B. Epidemiological patterns of ocular trauma. Aust N Z J Ophthalmol 1992; **20:** 95-8.
[9] Anterior segment consequences of blunt ocular injury Y. M. Canavan and D. B. Archer British Journal of Ophthalmology, 1982, 66, 549-55
[10] Cillino S, Casuccio A, Di Pace F, Pillitteri F, Cillino G. A five-year retrospective study of the epidemiological characteristics and visual outcomes of patients hospitalized for ocular trauma in a Mediterranean area. BMC Ophthalmol 2008; **8:** 6.
[11] Soliman MM, Macky TA. Pattern of ocular trauma in Egypt. Graefes Arch Clin Exp Ophthalmol 2008**;** 246: 205-12.

[12] Canavan YM, O'Flaherty MJ, Archer DB, Elwood JH. A 10-year survey of eye injuries in Northern Ireland, 1967-76. Br J Ophthalmol 1980**;** 64**:** 618-25.
[13] Wong T Y,Tieslsch JM.Epidemiology of ocular trauma .In:Tasmanw,Jaeger EA,editors Duane's Ophthalmology,Philadelphia LippincottWilliams and Wilkins 2008
[14] Lipscomb HJ. Effectiveness of interventions to prevent work-related eye injuries. Am J Prev Med 2000; 18 (4 Suppl**):** 27-32.
[15] Kuhn F. Ocular traumatology: prevention, prevention, prevention. Graefes Arch Clin Exp Ophthalmol 2010; 248**:** 299-300.
[16] Hornblass A. Eye injuries in the military,Int. Ophthalmol Clin 1981;21:121-38
[17] Pai SG, Kamath SJ, D'Souza S, Dudeja L. A Clinical Study of Blunt Ocular Trauma in a Tertiary Care Centre. *Online J Health Allied Scs.* 2013;12(2):10.
[18] Marudhamuthu E,sivakumar N,Kumaravel T.Study of ocular injuries in road traffic accident patients .J.evolution med.Dent.sci.2017 ;6 9410;3219-22,
[19] Wolter JR. Coup-contrecoup mechanism of ocular injuries. AmJ Ophthalmol. 1963;56:785

Ecchymoses RE upper and lower lid



Anterior dislocation of crystalline lens

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