ORIGINAL RESEARCH PAPER

Ophthalmology

A CLINICAL PROFILE OF OCULAR TRAUMA IN PATIENTS ATTENDING A TERTIARY CARE HOSPITAL: A CROSS SECTIONAL STUDY.

KEY WORDS: Ocular trauma, occupational, injuries, protective wear, laceration

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ABSTRACT

Introduction: Vision is the most precious gift given by God and it is the most cared for function of the human. This is possible only with healthy eyes. Ocular trauma is the most important preventive cause of blindness or partial loss of vision in more than half a million people worldwide, the commonest victim is young population.

Aim: The study was aimed to determine the incidence and identify the current causes, mechanism, the object causing trauma, different sites, the common occupation at risk and extent/effects of injury to the eye, understand the normal course of healing and making the appropriate medical and surgical interventions in relation to different levels of trauma. The study focused at exploring possible methods to reduce the incidence and determine their outcome and assess the effects of different injuries on visual acuity of the patient.

Design: Cross-sectional Descriptive study

Place and duration of study: The study was conducted on patients attending ophthalmology out-patient department (OPD) at a tertiary care hospital during January 2019 to June 2020.

Methodology: Total 300 patients presenting with history of trauma to one or both eyes were selected from the Opthalmology (OPD). Each patient was examined at every visit between January 2019 to June 2020. The means and standard deviations (SD) were calculated as continuous variables, while frequencies and percentages were calculated as categorical variables. $P<0.05$ was considered to be statistically significant, keeping alpha error at 5% and beta error at 20%, thus giving a power to the study as 80%.

Results: Results suggested that ocular trauma is associated with varying degrees of loss of vision and earning capacity with Social and economic consequences. Reasons behind ocular trauma involved mainly include; agricultural injury, occupational injuries and road traffic accidents in the decreasing order. The results depicted majority of the anterior segment cases with maximum prevalence in younger age group.

Conclusion: Early referral, prompt evaluation and treatment could have reduced the vision/sight threatening complications in these cases. Better health education and explaining the importance of preventive and protective measures like protective glass, helmets are some of the recommendations suggested by this study.

INTRODUCTION:

Vision is the most precious gift given by God and it is the most cared for function of the human. This is possible only with healthy eyes. Ocular trauma is an important cause of preventable blindness and visual impairment. In industrialized nations, the most common reason for extended hospitalization of ophthalmic patients is trauma and is very common among young adults. Since ocular injuries affect mostly the productive population, it causes a major socioeconomic loss. Ocular trauma may range from minute corneal abrasions or sub-conjunctival hemorrhage to a badly lacerated globe. 4.9 to 89 per 100000 cases might need immediate hospitalization. (Ranjan, Islam, & Saha, 2017)

Generally, the severity of eye injuries during presentation decides the outcome of the trauma. But the delicate ocular tissues and delayed presentation worsens the visual outcome. (Wong, Klein, & Klein, 2000) Ocular trauma is one of the major causes of ocular morbidity and blindness. (Dandona et al., 2002), (Dannenberg, Parver, & Fowler, 1992). Trauma may occur in children while playing. Young men may fall upon projecting blunt objects at work/ in factories/ construction sites/ road side falls/ high speed travel/ road traffic accidents or sport injuries. In a rural set-up, agricultural activities cause minor and severe ocular injuries. Though the eye is encased in the orbital bony cavity cushioned with a layer of fat and covered with two vertically sliding lids each containing a protective shield of tarsal plate still injuries to globe can occur frequently. Majority of these injuries are sustained by active and productive individuals. Unfortunately, these injuries may often be vision threatening. The lifestyle and future of these injured individuals can be altered. According to the present working pattern and visual demands of patients and the use of sophisticated instruments, it has become mandatory on the part of an ophthalmologist to identify the various ocular structures involved due to trauma, which may range in severity from a simple corneal abrasion to an extensive rupture of globe and provide satisfactory vision at its earliest. Eye injuries are avoidable as prevention at work place, on the sports field and in home can be attained effectively. Patients and ophthalmologist must be aware of activities that increase the risk of eye injury and must take advantage of protective eye wear that are available. These protective gears vary according to the the need of the subjects and when used in proper manner can reduce eye injuries by as much as 90 percent. Ocular trauma is the most important preventive cause of blindness or partial loss of vision in more than half a million people worldwide, the commonest victim is young population. (Dandona et al., 2002)
In addition to physical and psychological costs of eye injuries to the individual, the direct and indirect cost of eye injuries to the society is enormous. The impact of ocular trauma in terms of need for medical care, loss of income and cost of rehabilitation services points towards the need for strengthening of preventive measures among the people. With the knowledge of circumstances of injuries, their nature and damages caused, it will become easier to understand the preventive measures which would ultimately help in early appropriate management.

MATERIALS AND METHODS:

Subjects presenting with history of trauma to one or both eyes were selected from the ophthalmology department (OPD). A total of 300 patients were examined from January 2019 to June 2020. Each patient was examined at every visit during this period. The time interval between injury and consultation at these hospitals varied accordingly. Cases with old and fresh injuries were included in this study to know the long time effects and complications of ocular trauma. Cases were subjected to a detailed case history of injury a detail history

regarding age, sex, occupation, causative agents, duration of injury, direction of force, signs and symptoms occurring following the injury were taken;

a. A detail torch light examination was performed.
b. Vision was recorded on Snellen's chart.
c. Intra ocular pressure was recorded with applanation tonometer, vision and intra ocular pressure could not be accurately recorded in a few badly damaged globe cases.
d. Sac syringing was performed in eyelid injuries involving medial canthus to ensure patency of nasolacrimal duct system.
e. Direct ophthalmoscopy was performed in all cases.
f. Indirect ophthalmoscopy could be performed in only a few cases.
g. **Slit lamp examination** was performed in most cases.
h. **Gonioscopy** was performed in all patients except patients with purely subconjunctival hemorrhage who were not subjected to gonioscopy. (Gonioscopy could not be performed in a few cases)
i. **Retinoscopy** was performed in patients without media opacities, with traumatic mydriasis, miosis, sphincter tears, subluxation, dislocation of lens, and iridodialysis.
j. **Plain-x-ray:-** x-ray of the skull in antero-posterior view, water's nose chin position and reeseparieto orbital oblique projection were taken. Whenever necessary and in all medico legal cases.
k. **USG B scan:-** Ultrasonography was performed in patients, suspected to have a vitreous hemorrhage, retinal detachment with or without media opacities.
l. **CT scan:-** plain in orbital fracture, road traffic accident cases H/O fall and medico legal cases with badly injured globe and adnexa in desirable cases.

Subjects with purely sub-conjunctival hemorrhages were called for follow up once in every 4 days. Also, cases that were discharged from the ward were called for follow up once in week, 2nd week, 2nd month, 3rd month, 6th month and as and when required. The follow up of the cases was fair as most of them stopped attending the outpatient department once they were symptomatically better.

Investigation: Plain-X-ray:
Plain x-ray was taken in cases of suspected fractures.
a. X-ray skull (A.P view and lateral)
b. Modified water's nose-chin position.
c. Reese method (Parieto-orbital oblique projection).

Modified Water's nose chin position: This view shows a fracture of the orbital floor and a prolapse of soft tissue into the maxillary antrum. Procedure with the film centered at the level of the center of the orbit; the patients chin and nose rest on the film such that the mid saggital plane is perpendicular to the plane of the film. The central rays directed perpendicularly through the mid orbits.

Reese method:
Parieto-orbital oblique projection, this view demonstrates the optic canal in cross-section lying in the lower outer quadrant of the orbital shadow.

Procedure: The orbit is centered on the film with the zygoma, nose and chin resting on it, the head is adjusted to place the acantho meatal line perpendicular to the plane of the film. The midsagital plane forms an angle of 53 degrees with the plane of the film. The central ray is directed perpendicular to the midpoint of the film.

Gonioscopy: Gonioscopy is a clinical technique used to examine structure in the anterior chamber angle. The Goldman three mirror lens was used in this study.

Procedure: The cornea was anaesthetized with a xylocaine eyedrops (4%) topical. The patient was seated comfortably on an adjustable stool with the chin rest of the slit lamp. The goldman three mirror lens after being thoroughly washed was placed against the cornea with methylcellulose bridge. After focusing the slit lamp beam the angle was studied by rotating the lens to visualize 360 of the angle, visualization of the angle was enhanced by manipulating the gonioprism. Both the eyes were examined.

Indirect ophthalmoscopy:
The indirect ophthalmoscopy is applicable to all refractive errors and its beam penetrates most of the media opacities. The Keeler binocular indirect ophthalmoscope with the lens strength of +20D was used in this study. With the pupils fully dilated the patient were examined in the supine position in a darkened room. The periphery of the retina was viewed with the scleral indenter. Both eyes were examined.

B Scan Ultrasonography:
In B scan ultrasonography contact method was performed in contact technique the ultrasound probe is held directly against the close lids. In this study; the ultrasound probe used was sector 5 mega hertz. Coupling agent used was ultragel which prevents air interfaces and early sliding of probe, once the closed lids ultra sound was performed on patients with suspected 100 retinal detachment without media opacities.

Data obtained was compiled on a MS Office Excel Sheet (v 2010, Microsoft Redmond Campus, Redmond, Washington, United States.) Data was subjected to statistical analysis statistical package for social science (SPSS v 21.0, IBM).

Observation and results
The study depicted that ocular injuries most commonly occurs in young people and people who are in productive age group. Out of 300 subjects, 47 patients (15.7%) were between age group of 0-15 years, 124 patients (41.3%) were between the age group of 16-30, 85 patients (28.3) were between 31-45 years, 30 patients (10%) were between 46 to 60 years and 14 patients (4.7%) were between above 61 years. Of the total subjects, 210 (70%) of them were males involved in RTA and occupational injuries keeping view that the predominant gender involved in driving, Industrial and agricultural occupations. Summary results for the type of ocular trauma suggested the 88.3% (265 cases) were caused by blunt trauma and remaining 11.7% were due to penetrating trauma.The study distributed the cases according to the source of injury, and it was observed that, twenty percent of the cases were agricultural, followed by domestic causes (18 percent), occupational reasons (18 percent) and outdoor playing activities (15 percent). Minor causes included; assault (four percent), sports (nine percent), travel and one percent work related causes. Occupational risk was measured for people working for different occupations like; business, carpenter, casual worker, conductors, driver, factory workers, farming, housewives, lab technicians, labourers, mechanic, merchant police constable, petty business, stone work student teacher technician, vegetable render watch repair worker. Time interval following the ocular trauma was considered for studying the distribution of the cases. Of the total 300 cases, 141 (47%) of the cases consulted within 24 hours, forty-eight patients (16%) consulted between day 1 to day 5, seventy-six (25.3%) cases were consulted within 1 month, two (0.7%) subjects consulted between one to two months duration and thirteen (4.3%) patients had consulted after 24 months. Seventy-six (25%) cases had consulted after 5 days and more. Study suggested that if the subjects would have consulted earlier the prognosis would have been better. Subjects were also distributed on the basis of the time of visit to the Opthalmology OPD.

Objects causing ocular injuries were also studied and were summarized using frequency and percentages, and were as follows; stone (6.7 %), stick (21.3%), fist(6.7%), RTA (19.7%),

iron rod (7%). Stone injuries were common among stone workers and labourers who are engaged in stone cutting, crushing industries and among agricultural labourers and those who were working in construction industry. Injury with the stick was common among agricultural community. The study presented the cases as per the percentage of involvement of lids (90 percent), conjunctiva (67.7%), corneal (26%), anterior chamber, iris, pupil, cranial nerves and posterior chamber involvement.

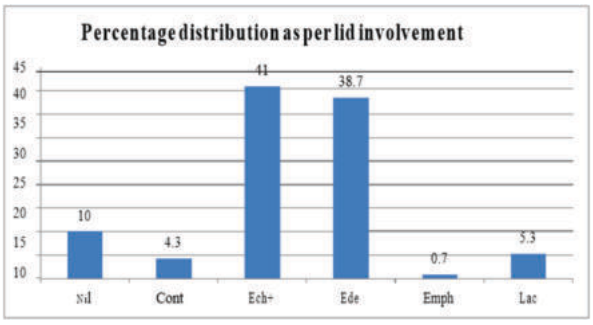

Figure no 1: Bar diagram depicting percentage distribution as per lid involvement

Table no 1: Shows distribution of cases according to conjunctival involvement

Conjunctiva	No. of Cases	Percent (%)
Nil	97	32.3
Cicumcorneal congestion (CCC+)	30	10
Chemosis(Chem+)	65	21.7
Laceration(Lac)	18	6
Subconjunctival Hemorrhage(SCH)	90	30
Total	300	100

Figure no. 1 depicts percentage of involvement of lids including; ecchymosis, edema, emphysema while abrasion and contusion lacerations. **Table no. 1** shows the percentage of conjunctival involvement i.e, of 203 conjunctival lesion subjects, 90 cases (30%) had sub conjunctival hemorrhage, 30 cases (10%) had circumcorneal ciliary congestion, 65 cases (21.7%) had chemosis and 18 cases (6%) had conjunctival laceration. When observed for 78 cases (26%) with corneal lesions, 15 (5%) cases suffered corneal abrasion, 13 (4.3%) subjects had laceration, six (two percent)cases had descemet's tear, 10 (3.3%) cases had corneal edema and remaining 6 patients (2%) had blood staining. For anterior chamber, out of 300 cases, 2 cases (0.7%) have cells in Ac, flat in 5 cases (1.7%), hyphema were present in 21 cases (7%) and AC was irregular in 4 cases (1.3%). Out of 300 cases 60 cases (20%) had iris involvement, 22 cases (7.3%) had iridodonesis, 29 cases (9.7%) had iridodialysis, 6 cases (2%) had iris prolapse. Out of 300 cases, 54 cases (18%) had pupil involvement, 19 (6.3%) cases had traumatic miosis, 17 (5.7%) cases had traumatic mydriosis, 5 (1.7%) cases had traumatic RAPD and 2 (0.7%) cases had sphincter tear. Lens was involved in 57 (19%) cases, of these lens was subluxated in 7 patients (2.3%), dislocation of lens was seen in 4 (1.3%) cases, 31 (10.3%) cases had partial opacity and total opacity was seen in 12 patients (4%) . Out of 300 patients asper the clinical findings of posterior segment damage 41 (13.7%) cases were involved, 15 (5%) cases had vitreous hemorrhage, 3 (1.5%) cases had Macular edema, 18 patients (6%) had retinal detachment, Vitreous hemorrhage, Retinal detachment and macular edema are commonest in posterior segment injuries. The study depicted cranial nerve injuries the involved 3rd nerve paralysis in 5 (1.7%) cases, 6th nerve paralysis in 2 (0.7%) combined 3 rd and 6th nerve paralysis in two percent cases. Important characteristics for this study i.e; visual acuity at the time of admission is represented in **Table no. 2.** Distribution of cases as per visual acuity at the time of discharge is shown in **Figure no. 2**

Table no. 2: Distribution of cases as per visual acuity at the time of admission

VISION	No. of Cases	Percent (%)
6/12	29	9.7
6/18	58	19.3
6/24	41	13.7
6/36	36	12
6/6	6	2
6/60	24	8
6/9	12	4
FC1/2m	1	0.3
FC1m	6	2
FC2m	10	3.3
FC3m	2	0.7
FCCF	22	7.3
HMCF	15	5
NO PL	13	4.3
PL+	25	8.3
Total	300	100

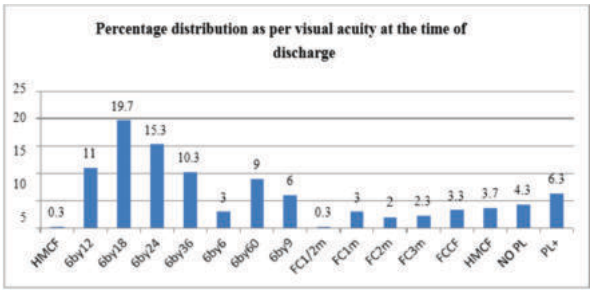

Figure no. 2 Percentage distribution as per visual acuity at the time of discharge

DISCUSSION

The incidence of ocular trauma was found to be highest highest in age group below 30 years i.e; children and young adults, the youngest patient was 3 months old child and oldest patient was 70 years old. Incidence of ocular injury was found to be highest in the younger age group and children of 16 to 30 years (41.3%). This could be most probably as a result of increased exposure to risk of ocular trauma, exposure and lack of awareness, regarding injuries among children. This finding is similar to the study conducted by (Jain & Soni, 1987) in which the maximum incidence of ocular injuries was seen in the age group of 16 to 30 years (63%) and by children below 16 years (23.2%). This is possibly because children left to play unsupervised by their parents.

Male predilection (70 percent) was observed when studied for incidence distribution of ocular trauma, the male female ratio was 2.3:1, this nearly coincided with the study conducted by (Eagling, 1974) where the male to female ratio was 6.5 : 1. According to (Jain & Soni, 1987) incidence was 69.3% in males and 30.7% in females. The studies have shown a significant male preponderance. The possible reasons for males being more exposed to ocular injuries might be greater mobility and activity of men. The incidence of male drivers in India is 123 times more than the females. Additionally, higher incidence of violent outdoor activities is seen in males. Regarding sex incidence, because of growing Industrialization, where males are the main employees it is more common in males.

This study divided the cases based on their occupations, as different type of machines and equipments pose certain reasons increasing the chances of ocular injuries.

a. Farmers, b. Manual workers (Mechanics, Labourers, carpenters etc.) , c. Students, d. Housewives and e. Others. It was observed that highest incidence of ocular injuries was among agricultural injuries mainly farmers. This could be

possibly because majority of the population around the specified area were farmers and/or involved in agricultural related occupations. The farming methods in developing nation like India, are not mechanized. The older methods of digging and cutting corn make the farmers more susceptible to ocular injuries specially in India. Majority of the farmers involved in the study were illiterate and had never used protective gear. Instead of consulting with an ophthalmologist, they visited quacks in villages and only reached the ophthalmologist at a later stage only to decrease the chances of better prognosis.

Injuries were further grouped as a. Agricultural injuries, b. Injuries due to road traffic accidents, c. Injuries due to sports and play, d. Domestic injuries, e. Injuries following assault, f. Injuries due to fall as per the classification by (Part, Duke-elder, & Macfaul, 2021) where they broadly divided occupational groups. Lack of protective gear usage by the industrial worker was found as one of the major causes of ocular damage. The study majorly found occupational injuries as the most common reason followed by sports and road traffic accidents (RTA) and assault. (Forsius & Nikupaavo, 1964) found that 11.4% of Ocular injuries occurred among agricultural workers, injuries commonly are due to twigs, animal horn, tail, whiplash.

The commonest agents to cause injuries were sticks and stones followed by injuries against cricket ball, rubber ball and fist. In this study most common object caused trauma to the eye was stick (21.3%) followed by stone (18%) and fist (6.7%), Road Traffic accidents (19.7%) iron rod (7%), ball (11.3%), branch of tree (5%) and so on. The study by (Jain & Soni, 1987) also presented in the study that the commonest objects causing injury to the ocular tissues were stones and sticks.

Time lag before reaching the opthalmologist was calculated and compared, as it formed one of the major reasons for poor prognosis of the cases in this study. Of the total cases examined, 141 (47%) were examined with in first 24 hours following injury, most of the patients presented within 5 days of injury. They mainly consisted of the subjects with sub conjunctival hemorrhage. Some patients had received medical treatment before consulting the designated hospital in this study and few had taken indigenous medicine at homes. Cases that consulted after the long period following injury usually did not suffer from significant symptom and signs at the time of injury or had received treatment else where at the time and presented with sequelae or complications.

In this study black eye or periorbital contusion was the most common clinical findings seen in 123 cases (41%) of cases, this involved ecchymosis to the eye lid and or periorbital region. This was in accordance with the study conducted by (Orlando & Doty, 1996) presented 125 patients with ocular injuries between sports and reported an incidence of 36% of lids of periorbital contusion injuries, other findings included periorbital edema (38.7%), periorbital laceration 16 cases (5.3%), crepitus/emphysema (2 to 2.5%) and lid edema (39%). There were 90 patients with purely subconjunctival hemorrhage. Pain, redness, and lacrimation were common symptoms followed by diminished vision. Subjects with Road Traffic Accident or assault had minor injuries else where on the body. It has been observed that, the damage to anterior segment of the eye was more common than posterior segment. (Macewen, 1989) studied 5671 patients with ocular injuries and found out that 98.3% of all injuries involved periorbital or superficial ocular structures. It was the most common clinical findings of total number of 90 cases (30%), subconjunctival hemorrhage were not graded as described by RC Guptha because of varying consultation interval after the injury. Most of the subconjunctival hemorrhage were due to minor trauma. They varied from small petechiae to large extra vision the anterior margin being more dense and hemorrhage tapering posteriorly except in severe subconjunctival hemorrhage were the posterior limit could not initially be made out.

There were 18 cases with conjunctival laceration out of which a small number of cases had a laceration of more than 5 mm in length. The subconjunctival hemorrhage absorbed completely, absorption occurred over a period of 15 to 21 days. Of the total cases, 78 cases (26%) had corneal findings, out of which 15 cases had corneal abrasion, 10 had corneal edema and six cases had blood staining of cornea. Out of 10 cases (3.3%) of corneal edema all of them were associated with hyphema. The IOP in these cases was slightly raised initially and become normal after few days of treatment 15 cases (5%) of corneal abrasion were seen but all of them, healed within one day.

There were 6 patients with a partial thickness corneal tear which was in the superotemporal area just away from the limbus. In this study, 6 patients had blood staining of the cornea and had visited the OPD 6 to 18 months after the injury. The presence of blood staining of the cornea suggested a massive hyphema earlier with raised IOP. As stated by (Beyer & Hirst, 1985), due to severe trauma, when there is massive hyphema and raised intra ocular pressure, there may be absorption of decomposition products of blood pigments from the anterior chamber.

Hyphema of various degrees have been described by many as frequent clinical findings but in this study, only 21 cases of hyphema were present most involved 1/3 to ½ of the anterior chamber, two cases had only marginal increase in IOP but none of them had significant raise in IOP. These findings correspond to the findings of other studies that state, angle recession was invariably present with a macroscopic hyphema. Involvement of the pupil constituted major number of clinical findings out of 54, traumatic mydriasis was present in 17 eyes (5.7%), miosis in 19 eyes (6.3%) synechiae in 6 cases (3%) and traumatic sphincter tear in 2 cases (0.7%) our study. Similar results were observed in a study conducted by (Canavan, O'Flaherty, Archer, & Elwood, 1980) in where 79 cases had iris and papillary injuries. Studies by (Canavan et al., 1980) and by Blanton noted 80.5% and 71% incidence of angle recession following trauma respectively, which was in contrast to the present study.

In most of the ocular structures with angle recession IOP was with in a normal limit, few of the eyes had a low tension in early post traumatic period, but returned to normal later, two of them with angle recession, presented late and had a raised IOP. Despite the presence of angle recession, the simultaneous association of a rise in the IOP was not seen in this study.

Fifty-seven of the eyes had lenticular involvement in the form of subluxation, dislocation, lenticular opacities, with or with out rupture of anterior capsule as opposed the 52 eyes out of 212 in a study Canavon and Archer [79]. In this study 57 (19%) eyes with lens and pupillary damages some eyes had simultaneous lenticular damage as opposed to 44 and 79 eyes with lens or pupillary abnormalities in this study, conducted by (Canavan et al., 1980). In this study, in 4 cases there had dislocation of lens in the AC which has clear of the 7 cases of subluxation with or without lenticular opacity and 7 cases had pure lenticular opacity (Rosette) 12 were with total lenticular opacity.

There were a total of 41 cases of posterior segment involvement of these few cases had purely posterior segment involvement. There were 15 eyes in this study had vitreous hemorrhage, because of 129 in all the 15 cases there has been a tear in the ciliary body. There was not a single case of retinal hemorrhage.

These were 18 cases of retinal detachment which could be appreciated in indirect ophthalmoscopy and was confirmed by ultrasonography this patient was young and who has high myopia and defective appreciation of projection of rays in the inferotemporal quadrant the patient was referred to higher center for further management. It is frequent finding, macular edema is a marked feature of retinal edema, following a ocular trauma.

1. The posterior pole is in the line of direction of contre-coup of the impinging force FVA
2. And also of its Anatomical pre disposition. A total of 3 cases with macular edema was observed the vision returned to normal in most of the cases as the edema subsided over a period of 1-2 months.

The first case of macular hole was described by (Gaudric & Couturier, 2016), where 9% of macular hole was attributed to trauma, we observed only 1 case (1%) of macular hole in a old case of ocular injury. He had central scotoma with parafoveal fixation. Of the total cases nine cases (three percent) had best corrected visual acuity of 6/6, of the remaining 293 cases, 18 eyes (6%) had BCVA of 6/9, 33 eyes (11%) had 6/12, 59 eyes (19.7%) had 6/18, 46 cases (15.3%) had 6/24, 31 cases (10.3%) had 6/36, 27 cases (9%) had 6/60, 6 cases (2%) had less than cf 2mts, 10 cases (3.3%) cf/CF, 19 cases (6.3%) had PL+ +PR+ , 13 cases (4.3%) had no PL.

In most of the cases, in this study patients consulted us with in first few days of injury showed a lower IOP as compared to non traumatized eye. Only in a few of these cases, the non traumatized eye also showed a lower IOP.

In cases of traumatized hyphema, there was a marginal increase in IOP and in all these cases the IOP returned to normal soon. There was no significant rise in IOP in cases with angle recession and was consistent with the study conducted by (Canavan et al., 1980)

All cases with subluxation with out dense lenticular opacities showed an error towards myopia, there was no significant change in other cases. Traumatic optic neuropathy was seen in 1.3 % cases all these cases were associated with RAPD. Visual acuity ranges from counting finger to projection of rays. The fundus with optic atrophy is present in 4 cases. Patients presenting within 24 hours were treated with IV Methyl prednisolone 30 Mg/ Kg loading dose followed by 5-4 mg./kg/hr for 24 hours which followed by oral prednisolone (tab wysolone) 10 mg. tapered gradually over a period of 10 days.

Extra ocular muscles and nerves 5 cases (1.7%) of traumatic total 3rd nerve paralysis were seen, two cases (0.7%) of 6th nerve paralysis were seen, six cases of combined 3rd and 6th nerve paralysis. In traumatic 3rd nerve paralysis, ocular movements were restricted in all the directions, pupil in the affected eye, was directed and fixed.

There were 5 cases (1.7%) of corneo-scleral rupture starting from extreme periphery of the cornea and running through the sclera these were associated with prolapse of the iris tissue. Suturing was done using 10.0 vicryl after iris abscission/reposition. This findings were also found in the study conducted by (Kylstra, Lamkin, & Runyan, 1993) where they reported an incidence of 3.5% corneo scleral rupture.

From this study we can infer that children and young adults are more prone to ocular trauma. As the agricultural injury constitute main bulk of ocular trauma followed by occupational injuries and Road traffic accidents, so we need to apply protective measures amongst these people to reduce incidence of ocular trauma considerably in our country. Many of the injuries could have been prevented, if the patients had used protective eye wear during work or play. We need to stress more on the importance of preventive measures by which incidence of these cases can be reduced. In the unfortunate event of trauma. The patient must be seen as early as possible referred to an Ophthalmologist for adequate management. Thus awareness can be brought about by better health education (in school and factories) in this direction. Early referral, prompt evaluation and treatment will reduce the vision / sight threatening complications in these cases. Patients should be explained, the importance of protective measures like protective glass, helmets etc. And advised to use them in occupations such as sports and travel.

CONCLUSION

It is clear from the study that ocular trauma is associated with varying degrees of loss of vision and has social and economic consequences. There is a need to develop and evaluate new interventions for prevention and management of all types of eye injuries. Inter disciplinary approaches and community based strategies will be important to make progress in this area of study to save and salvage vision.

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