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A PROSPECTIVE STUDY OF ANALYSIS OF OCULAR MANIFESTATIONS OF BLUNT TRAUMA TO THE EYE

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Abstract

Introduction: Ocular injury is a major health problem in India, blunt trauma being one of the important causes of ocular morbidity and blindness. Children at play, young men at work, in factories and construction sites, road side falls, high speed travel and Road Traffic Accident, sport injuries, fall on projecting blunt objects and in a rural setup like ours agriculture-based injuries are the causes of minor and severe blunt injuries.

Materials and Methods: It is a prospective, interventional study. 200 cases of blunt trauma presented at Department of Ophthalmology, Govt Medical College, Baramulla from January 2021 to December 2021 were prospectively studied. Visual acuity was recorded on Snellen's chart, direct ophthalmoscopy, indirect ophthalmoscopy, slit-lamp examination were done. Relevant investigations were carried out such as X-ray orbit, fluorescein staining, lacrimal probing, syringing, gonioscopy, B-scan ultrasonography, CT scan and MRI scan in selected patients.

Results: In this study consisting of 200 cases, the age range was from 3 months old child to 80 years old woman. Incidence of ocular injuries were found to be highest in the younger age group and children of 16 to 35 years (51%). Maximum cases were below the age group of 35 years. It has been observed that children and young adults are more prone to injuries, this may be due to more exposure to risk of blunt injuries, exposure and lack of awareness, regarding injuriesamong children.

Conclusion: Our study indicates that ocular lesions with blunt injuries are fairly common. In our study, occupational injuries mainly agriculture related as the cases are from Baramulla. The ocular trauma is associated with varying degrees of loss of vision and earning capacity withsocial and economic consequences. Early referral, prompt evaluation and treatment will reduce the sight threatening complications in these cases.

Key Words: Ocular injury, morbidity, blindness, direct ophthalmoscopy, indirectophthalmoscopy.

INTRODUCTION

Ocular injury is a major health problem in India, blunt trauma being one of the important causes of ocular morbidity and blindness. Children at play, young men at work, in factories andconstruction sites, road side falls, high speed travel and Road Traffic Accident, sport injuries, fallon projecting

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blunt objects and in a rural setup like ours agriculture-based injuries are the causes of minor and severe blunt injuries.[1]

Ocular trauma not only causes visual impairment but also levies a tremendous financial penalty. In the past, severe blunt trauma invariably resulted in devastating visual loss. Understanding the pathophysiologic mechanism and advent of microsurgical technique and instrumentation has greatly improved the visual prognosis.[2]

The majority of these injuries are sustained by active and productive individuals. Unfortunately, these injuries may all be often vision threatening and the lifestyle and future of these injured individuals are irrevocably altered.[3]

The lifetime prevalence of ocular trauma is higher than that of diseases like glaucoma, age- related macular degeneration or diabetic retinopathy. Out of all types of ocular emergencies, ocular trauma is by far the commonest, constituting nearly 75% of all ocular emergencies.[4]

Ocular trauma is the most important preventable cause of blindness or partial loss of vision in more than half a million people worldwide, the commonest victim is young male.[5] With the knowledge of circumstances of injury, their nature and the damage caused, early appropriate management can be taken, and preventive measures may be advised.

MATERIALS AND METHODS

Study design: It is a prospective, interventional study.
Study duration: January 2021 to December 2021.
Study location: Department of Ophthalmology, Govt Medical College, Baramulla.
200 cases of blunt trauma presented at Department of Ophthalmology, Govt Medical College, Baramulla from January 2021 to December 2021 were prospectively studied. Visual acuity was recorded on Snellen's chart, direct ophthalmoscopy, indirect ophthalmoscopy, slit-lamp examination were done. Relevant investigations were carried out such as X-ray orbit, fluorescein staining, lacrimal probing, syringing, gonioscopy, B-scan ultrasonography, CT scan and MRI scan in selected patients.

Inclusion Criteria:

- All Cases of Blunt Injury to the Eye Attending the outpatient department and
- Casualty department of GMC Baramulla are included.

Exclusion criteria:

- All Cases of Chemical injuries
- Injuries with sharp instruments (penetrating, perforating) were excluded from the study.
- Patients who were having serious injuries which led them to life risk and needed priority management by other specialties were also excluded from the study.

Patients presenting with history of blunt injury to one or both eyes were selected from the out patients and in patients of Ophthalmology department Patients referred with blunt eye injury from

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the casualty department, Govt Medical College, Baramulla were selected. The time interval between injury and consultation at these hospitals varied considerably. The earliest injury - consultation interval being 2 hours and the longest being 10 days. When a patient presented with a history of blunt injury. A detailed history regarding age, sex, occupation, causative agents, duration of injury, direction of force, signs and symptoms occurring following the injury were taken. A detailed torch light examination was performed. Vision was recorded on Snellen's chart. Ophthalmoscopy was performed in cases wherever possible. Slit-lamp examination was performed in all the cases. Gonioscopy was performed in all patients except patients with purely subconjunctival haemorrhage and corneal injury and severe lid injury, oedema which prevented from doing gonioscopy.

RESULTS

In this study consisting of 200 cases, the age range was from 3 months old child to 80 years old woman. Incidence of ocular injuries were found to be highest in the younger age group and children of 16 to 35 years (51%).

Maximum cases were below the age group of 35 years. It has been observed that children and young adults are more prone to injuries, this may be due to more exposure to risk of blunt injuries, exposure and lack of awareness, regarding injuries among children.

Source of injury	No of cases	Percentages
Occupationalinjuries	104	52%
Sports and play	46	23%
RTA & Assault	44	22%
Others	6	3%
Total	**200**	**100%**

Table 1: Distribution of Cases According to Source of Injury

Objects	No of cases	Percentage
Stone	36	18
Stick	24	12
Iron rod	14	7
Ball	10	5
Fist	24	12
Metallic/Wooden extraocular FB	8	4

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Branch of tree	4	2
Bull gore	12	6
Knob of door, Cupboard	8	4
Whip lash	8	4
Cycle/Scooterhandle	8	4
Handle of handloom/lathe/Silk	6	3
Finger nail	4	2
Pencil/Pen blunt end	8	4
Racquet	4	2
Tooth brush	4	2
Others (RTA etc.)	18	9
Total	200	100

Table 2: Objects Causing Blunt Injury

Ocular involvement	**No of cases**	**Percentage**
Periorbital region	112	56
Lids	130	65
Conjunctiva	140	70
Cornea	28	14
Hyphaema (AC)	12	6
Iris	40	20
Angle Recession	12	6
Lens	40	20
Posterior segment	36	18

Table 3: Ocular Structures Involvement

Periorbital Lesions	**No of cases**	**Percentage**
Ecchymosis	82	41
Lid oedema	74	37

Laceration	16	8
Emphysema	8	4
Fracture	18	9

Table 4: Distribution According to Periorbital Involvement

Conjunctiva	**No of cases**	**Percentage**
Subconjunctival haemorrhage	88	44
Chemosis	40	20
Laceration	12	6
Total	**140**	**70**

Table 5: Distribution of Cases According to Conjunctival Involvement

Cornea	**No of cases**	**Percentage**
Abrasion	10	5
Partial laceration	4	2
Descemet's tear	2	1
Oedema	6	3
Ulcer	2	1
Blood staining of cornea	4	2
Total	**28**	**14**

Table 6: Corneal Lesions

Iris	**No of cases**	**Percentage**
Iridodonesis	6	3
Iridodialysis	16	8
Synechiae	6	3
Total	28	14

Table 7: Distribution of Cases According to Iris Involvement

Pupil	**No of cases**	**Percentage**
Miosis	12	6
Mydriasis	18	9

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Total	30	15

Table 8: Pupil Involvement

Lens involvement	No of cases	Percentage
Subluxation of lens withand without lenticular opacity	4	2
Dislocation of lens	2	1
Partial opacity	14	7
Total opacity	4	2
Pure lenticular opacity (Rosette)	6	3
Total	30	15

Table 9: Pattern of Lens Involvement

Clinical Findings	No of cases	Percentage
Vitreous		
Vitreous herniation in to anterior Chamber	4	2
Vitreous haemorrhage	6	3
Retina		
Berlin's oedema	6	3
Retinal oedema	6	3
Retinal detachment	8	4
Choroid		
Choroidal haemorrhage	2	1
Choroidal rupture	4	2
Total	**36**	**18**

Table 10: Distribution of Cases as per the Clinical Findings of Posterior Segment Damage

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Cranial Nerve Injury	No of cases	Percentage
Total 3rd nerve paralysis	2	1
4th nerve paralysis	2	1
6th nerve paralysis	4	2
Combined 3rd and 6th Nerve paralysis	4	2

Table 11: Cranial Nerve Injuries

Visual Acuity	No of cases	Percentage
6/6	84	42
6/9	40	20
6/12	34	17
6/18	10	5
6/24	4	2
6/36	2	1
6/60	2	1
1/60	4	2
Cf2mt	4	2
Cf/CF	4	2
Hm/Cf	2	1
Pl++PR+	4	2
Following light	2	1
No PL	4	2
Total	200	100

Table 12: Percent of Final Visual Acuity

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DISCUSSION

There were 84% males and 16% females in this study, the male female ratio was 5.25:1, this nearly coincides with the study conducted by Eagling EM6 (1974), the male female ratio was 6.5:1.[6]

The commonest causative agents were stones and sticks followed by injuries with cricket ball, rubber ball and fist. In this study, most common object causing blunt trauma to the eye was stone (18%) followed by stick (12%), fist (12%), road traffic accident (9%), iron rod (7%), bull gore (6%), ball (5%), branch of tree (4%), etc. The commonest mode of injuries was by stones.[7]

After excluding 44 cases (eyes) of subconjunctival haemorrhage out of 200 cases, 28 eyes (14%) had corneal findings, out of which 10 eyes had corneal abrasion, 6 eyes had corneal oedema, and 4 cases had blood staining of cornea. There were 4 patients with a partial thickness corneal tearof which 2 were in the superotemporal area just away from the limbus. In this study, there were 4 patients with blood staining of the cornea. 12 cases of hyphaema were present, most involved 1/3to ½ of the anterior chamber.[8]

There were a total of 36 cases of posterior segment involvement. 6 eyes in this study had vitreous haemorrhage, 6 had Berlin's oedema. Siegfried found 167 cases (12.5%) had Berlin's oedema. There were 8 cases of retinal detachment which could be appreciated on indirect ophthalmoscopy and was confirmed by B-Scan A total of 6 cases of retinal oedema were observed, the vision returned to normal in most of the cases as the oedema subsided over aperiod of 1-2 months. 4 cases of choroidal rupture, 2 cases of choroidal haemorrhage.[9]

Out of total 200 cases, 84 eyes of subconjunctival haemorrhage had a best corrected visual acuity of 6/6. The other two had pre-existing retinal pathology. Of the remaining 132 eyes, 40 eyes had a final visual acuity of 6/9, 34 eyes had a final visual acuity of 6/12, and 10 eyes had a final visual acuity of 6/18, 4 cases had 6/24, 2 case had 6/36. 2 had less than 1/60, 4 had counting fingers to 2 metres, 2 had hand movement close to the face, 4 had PL+ +PR, 2 had 'following light movement' PL+, and 4 had no PL.[10]

CONCLUSION

Our study indicates that ocular lesions with blunt injuries are fairly common. In our study, occupational injuries mainly agriculture related as the cases are from Baramulla. The ocular trauma is associated with varying degrees of loss of vision and earning capacity with social and economic consequences. Early referral, prompt evaluation and treatment will reduce the sight threatening complications in these cases.

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