



IMPACT OF BLUNT OCULAR TRAUMA: A STUDY ON DEMOGRAPHICS AND CLINICAL SPECTRUM IN A TERTIARY CARE

Ophthalmology

Dr. Anju Bhaskar

Assistant Professor, Department Of Ophthalmology, Pt. JNM, Medical College, Raipur, Chhattisgarh

Dr. Rajiv Kumar Gupta

Professor And HOD, Department Of Ophthalmology, RIO, RIMS, Ranchi, Jharkhand

ABSTRACT

Aim: This study analyzes the demographic and clinical aspects of blunt ocular trauma in patients attending tertiary care center, Jharkhand. **Methods:** A prospective cross-sectional study of 778 patients was conducted at a tertiary care center. Data including demographic profile, nature, cause and mechanism of injury and clinical features at time of presentation was noted. **Result:** 778 patients of blunt ocular trauma were included in the study. Most patients belong to the age group 21-40 years 58.09%, mostly from rural areas 69.66%. Age ranged from 18 months to 70 years with mean of 35.75 years. Males were affected more 75.06% than females 24.93%. Anterior segment was involvement was 83.41%. Workplace ocular trauma was the commonest in 40.35% followed by road traffic accident 25.32%. **Conclusion:** Blunt trauma has multiple consequences. Workplace injuries were more followed by road traffic accidents especially among young males. Public awareness regarding ocular safety measures like following traffic rules, protective eyewear, and timely and prompt management can reduce the risk of ocular morbidity and blindness.

KEYWORDS

blunt ocular trauma, anterior segment, closed globe, workplace

INTRODUCTION

Blunt ocular injuries accounts for nearly one-third of all ocular trauma cases.[1] The spectrum of injury can range from minor injury like subconjunctival hemorrhage to serious blinding consequences like optic neuropathy. It can lead to both open and closed globe injuries. Closed globe injuries can be contusion and lamellar lacerations. Open globe injuries are laceration and globe rupture.[2] Various mechanisms involved are coup, countercoup, anteroposterior compression and horizontal expansion.[3] Ocular injuries can happen anywhere including workplace, road traffic accidents, recreational and sports related activities, home and farms.[4] Coup injuries occur directly at the site of impact, resulting in conditions like corneal abrasions, lens subluxation or dislocation whereas contrecoup injuries occur on the opposite side of the impact due to transmitted force through the eye like retinal detachment, berlin's edema.[5] As complications of ocular trauma can be prevented to a great extent, timely decisions for diagnosis, referral and management are crucial. This study is a small effort to highlight among the community regarding different demographical and clinical presentations of blunt ocular trauma.

METHOD:

This study included 778 patients of blunt ocular trauma from September 2014- October 2016 in patients attending out patient department in tertiary care center, RIO, RIMS, Ranchi. Patients with pre-existing ocular pathologies and old case of ocular trauma of more than a week were excluded from the study. Demographic data, mode of injury, clinical presentation was noted. Thorough ophthalmic examination of both eyes including visual acuity, orbit and extraocular movements, slit lamp evaluation to assess adnexa, conjunctiva, sclera, cornea, anterior chamber, pupil, iris and lens was done. Fundus examination using 90D with slit lamp, or indirect ophthalmoscopy with 20D, intraocular pressure measurement using Goldman applanation tonometer, gonioscopy, B- SCAN ultrasonography, optical coherence tomography, computed tomography, magnetic resonance imaging, X-Ray was done in relevant cases. All blunt ocular injuries were classified according to Birmingham Eye Trauma Terminology System.

RESULTS:

778 patients of blunt ocular trauma attending tertiary eye care center, RIO, RIMS, Ranchi from September 2014- October 2016 were included in this study.

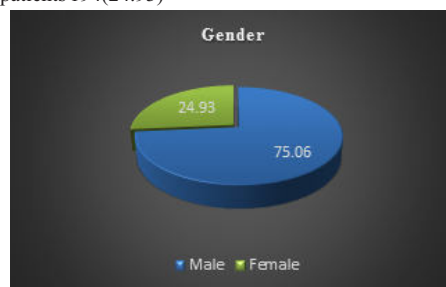
Age Group: Most patients belong to the age group 21-40 years (58.09%), Age ranged from 18 months to 70 years with mean of 35.75 years.

Table 1: Age Group

Age (years)	Frequency	Percent
22		

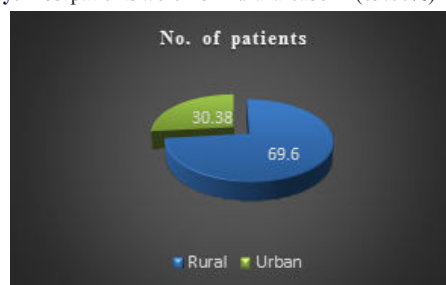
0-20	119	15.29
21-40	452	58.09
41-60	153	19.66
>60	54	6.94

Gender: Male patients 584(75.06%) were more as compared to female patients 194(24.93)



Graph-1: Gender

Locality: Most patients were from rural areas 542 (69.66%)



Graph-2: Locality

Type Of Injury: Most cases were closed globe injury 1206(94.73%), rest were open globe injury 67(5.26%)



Graph-3: Type of injury

Mode Of Injury: Workplace was commonest in 40.35% followed by Road traffic accident in 25.32%

Table-2: Mode Of Injury

Mode of injury	Frequency	Percent
Workplace	314	40.35
RTA	197	25.32
Domestic	115	14.78
Sports	79	10.15
Assault	73	9.38

Occupation: Laborer group is most commonly involved (27.76%) followed by farmers (20.17%)

Table-3: Occupation of the patients

Occupation	Frequency	Percent
Laborer	216	27.76
Farmer	157	20.17
Housewife	87	11.18
Student	94	12.08
Industrial worker	78	10.02
Others	146	18.76

Presentation:

Anterior Segment: Adnexa 78% was most commonly involved followed by cornea 51.02%. Most common anterior segment finding was periorbital edema 41.00% followed by corneal foreign body 37.40%

Table-4: Anterior Segment Finding

Structure	Finding	Frequency	Percent
Orbit	Lateral wall fracture	2	0.25
	Floor fracture	1	0.12
Extraocular movements	Oculomotor nerve palsy	3	0.38
	Abducens nerve palsy	2	0.25
Adnexa	Periorbital edema	319	41.00
	Ecchymosis	153	19.66
	Lid tear	126	16.19
	Ptois	9	1.15
	Conjunctival foreign body	14	1.79
Conjunctiva	Chemosis	119	15.29
	Conjunctival laceration	18	2.31
	Subconjunctival hemorrhage	138	17.73
	Sclera		
Sclera	Globe rupture	5	0.64
	Sclerocorneal tear	8	1.02
Cornea	Corneal foreign body	291	37.40
	Corneal abrasion	64	8.22
	Corneal tear	42	5.39
Anterior chamber	HypHEMA	19	2.44
	Uveitis	27	3.47
	Intraocular foreign body	1	0.12
Iris	Iris prolapse	4	0.51
	Iridodialysis	13	1.67
	Traumatic mydriasis	34	4.37
Lens	Traumatic cataract	51	6.55
	Dislocated lens	2	0.25
	Subluxated lens	9	1.15
	Phacodonesis	6	0.77
	Subluxated IOL	1	0.12

Posterior Segment: Most common posterior segment manifestation was found to be Berlin's edema in 7.32% followed by retinal hemorrhage in 5.52%

Table-5: Posterior Segment Finding

	Finding	Frequency	Percent
Vitreous	Vitreous hemorrhage	21	2.69
Retina	Retinal detachment	19	2.44
	Retinal hemorrhage	43	5.52
	Berlin's edema	57	7.32
	Macular hole	16	2.05
Optic nerve	Optic neuropathy	7	0.89

Objects Causing Ocular Injury: Most common objects were wooden sticks (14.39%) and leaf (11.31).

Table-6: Objects Causing Ocular Injury

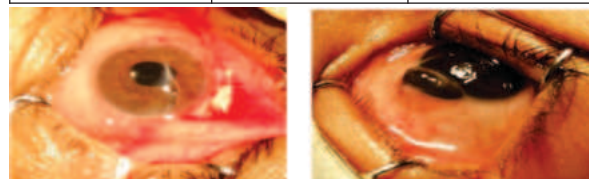
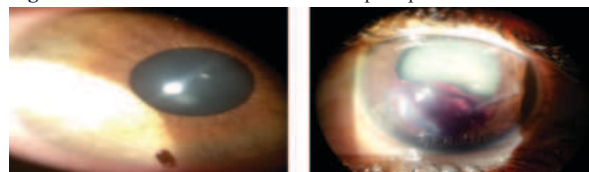
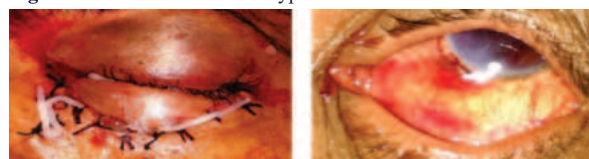
Objects	Open globe injury	Closed globe injury
Wooden stick	22	112
Animal	01	13
Thorn	00	11
Stone	16	79
Cricketer ball, bat, hockey stick	13	81
Sharp object (spring, glass particle)	00	21
Iron rod	08	67
Tree branch	07	78
Burn	00	12
Leaf	00	88
Chemical injury	00	07
Finger nail, fist, elbow, foot	00	84
Insect	00	58

Visual Acuity At Presentation:

46.14% patients had visual acuity better than 6/18 while 2.05% patients had no perception of light at presentation.

Table-7: Visual Acuity At Presentation

Visual acuity	Frequency	Percent
6/6 – 6/18	359	46.14
6/18 - 6/60	203	26.09
6/60 to 3/60	108	13.88
3/60 to PL	92	11.82
No PL	16	2.05

**Fig-1: Corneal tear****Fig-2: Sclerocorneal tear with uveal tissue prolapse****Fig-3: Corneal foreign body****Fig-4: Traumatic cataract with hyphema****Fig-5: Lid tear with periorbital edema****Fig-6: Subconjunctival hemorrhage****Fig-7: Right eye abducens nerve palsy post RTA****DISCUSSION:**

Ocular trauma is an important cause of visual morbidity worldwide, with pronounced socioeconomic impact. It is a major cause of preventable, unilateral loss of vision, particularly in developing countries.[6] In our study, young adults in the age group 21-40 years had more injuries (58.09%). This is in correlation with study done by (Dandona et al).[7] Males were affected more (75.06%) than females (24.93%). S Vats, GVS Murthy et al (2008) in their study noted similar

finding of male preponderance.[8]

A large proportion of the patients were from rural areas (69.66%) as compared to urban population (30.33%), similar finding was noted by Parida, S. et al.[9]

In this study workplace injuries were common mode of injury (40.35%). Work related injuries were also reported to be the commonest cause of eye injury in other studies.[10] Of the total workplace related injuries, labors were affected in 27.76% and farmers were affected in 20.17%. similar to study done by Nirmalan, Katz et al.[11]

This study showed closed globe injuries were more (94.73%) compared to open globe injuries (5.26%). This finding correlates with study done by Oum et al.[12]

In this study commonest object causing trauma was a wooden stick for both open (2.82%) and closed (14.39%) globe injuries. These findings correlate with studies done by Krishnan et al.[13]

In this study majority of the patients presented with anterior segment involvement (83.41%) of which adnexal involvement (78%) was commonest. Periorbital edema was most common 41.00% similar to study done by Sharat S et al.[14]

Visual morbidity due to blunt ocular trauma depends on the extent of damage, and its complications. Study done by Omolase et al. showed Open globe injuries had a poorer prognosis than closed globe injuries [15] in consistent with this study. In this study 46.14% had mild visual impairment and 27.75 suffered severe visual loss with visual acuity <6/60.

CONCLUSION:

Blunt trauma can occur at any age, but young adult males are more commonly affected. Injuries sustained during workplace and road traffic accidents are more common. Non usage of ocular safety measures, non-compliance to traffic rules and use of alcohol was a cause of poly trauma including ocular injuries. This study highlights the need for preventive strategies including health awareness of general population to prevent visual morbidity due to trauma by proper use of safety devices like protective eye wears, face masks etc. during high- risk activities. Early diagnosis with proper investigations and timely management can prevent further consequences and improve final visual outcome.

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Conflicts Of Interest- there are no conflicts of interest

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