



## OCULAR MANIFESTATIONS AND VISUAL OUTCOME IN HEAD INJURY PATIENTS ATTENDING A TERTIARY EYE CARE HOSPITAL—A RETROSPECTIVE STUDY

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**ABSTRACT** **Introduction** In this era of increased motor vehicle transport and industrial modernization, head injury is becoming one of major cause of casualty attendance. Most of the times ocular injuries associated with head injury which often gets overlooked as more importance is given to head injury which may lead to vision threatening ocular morbidity if not treated in time. The current study is done to assess ocular manifestations and visual outcome of head injury cases presenting to a tertiary care hospital in North east India. **Study design** – hospital based retrospective study **Material and methods** This retrospective study is conducted in Regional Institute of Ophthalmology, Guahati medical college, Guwahati, Assam, India. Study period is from 1st January 2019 to 31st December 2019. Cases are selected from hospital records of head injury patients attending emergency and/or OPD. Patients diagnosed with ocular manifestation following closed head injury are included in current study. Patients with previous ocular disease or surgery and patients with direct orbital trauma are excluded. The hospital record of patients are evaluated and analysed with relation to demographic and clinical profile. The cause of head injury, nature and type of head injury etc are recorded in a preformed proforma. All ocular manifestations and investigation findings are recorded in the proforma. The final visual acuity at 6 months was recorded in all patients. **Result** The commonest cause of injury road traffic accident 78.3%, followed by fall from height 8.3%, Assault 6.7%, sports related 3.3%, industrial and others 3.3%. The commonest manifestation in our study is lid ecchymosis 25.1% followed by conjunctival chemosis 7.9%, subconjunctival haemorrhage 14.8%, lid laceration 11.1%, pupillary abnormality 7.4%, orbital floor fracture 6.7%, globe rupture 3%, Berlins oedema 3%, restricted ocular movement 3% Ptosis 2 1.5%, vitreous haemorrhage 2 1.5%, retinal haemorrhage 1.5% optic nerve head avulsion 1.5%, papilloedma 2.2%. However the final visual outcome is better in patients without cranial bone fracture, though no statistically significant difference was found between two groups. **Conclusion** Road traffic accidents are most common cause of ocular manifestation in head injury, wThe commonest ocular manifestation is lid ecchymosis. However visual prognosis is better in patients without cranial bone fracture.

**KEYWORDS :** ocular manifestation head injury

### INTRODUCTION

In this era of increased motor vehicle transport and industrial modernization, head injury is becoming one of major cause of casualty attendance. In India more than 100000 lives lost every year and over one million suffers from serious head injury.<sup>1</sup>

Most of the times ocular injuries associated with head injury which often gets overlooked as more importance is given to head injury which may lead to vision threatening ocular morbidity if not treated in time. This can be avoided if adequate assessment and knowledge regarding head injury associated ocular manifestation is present and looked for at very early time.

The current study is done to assess ocular manifestations of head injury cases presenting to a tertiary care hospital in North east India with following aims

1. To analyse the different ocular manifestations in head injury with respect to mode of injury, type of head injury, causative factors etc.
2. To assess final visual acuity in relation to type of head injury

**Study design** – hospital based retrospective study

### MATERIAL AND METHODS

This retrospective study is conducted in Regional Institute of Ophthalmology, Guahati medical college, Guwahati, Assam, India. Study period is from 1<sup>st</sup> January 2019 to 31<sup>st</sup> December 2019. Ethical clearance taken from Institutional ethical committee.

Cases are selected from hospital records of head injury patients attending emergency and/or OPD with following inclusion and exclusion criteria

#### Inclusion criteria

1. Patients diagnosed with ocular manifestation following head injury
2. Only closed head injury patients

#### Exclusion criteria

1. patients with previous ocular disease or surgery
2. Patients with previous ocular injury
3. Patients with direct orbital trauma
4. patients with open head injury

5. patients lost to follow up

The hospital record of patients are evaluated and analysed with relation to demographic and clinical profile. The cause of head injury, nature and type of head injury etc are recorded in a preformed proforma. All ocular manifestations are recorded in the proforma. X ray, CT, MRI records etc are taken to consider to assess type of head injury whenever available. The final visual acuity at 6 months was recorded in all patients. Statistical analysis done using medCalc software (medcalc.org)

### Results and observation

We had total 120 patients in our current study. Out of this 101 male and 19 female. Age range is from 7 months to 78 year with maximum incidence in 20-40 year age group. (table 1)

**Table 1**

Age range(years)	number
1-10	5
11-20	8
21-30	50
31-40	40
41-50	5
51-60	5
61-70	6
71-80	1

The commonest cause of injury road traffic accident 94(78.3%) followed by fall from height 10(8.3%), Assault 8(6.7%), sports related 4(3.3%), industrial and others 4(3.3%) (table 2)

**Table 2**

Cause	number	percentage
Road traffic accident	94	78.3%
fall	10	8.3%
assault	8	6.7%
sports	4	3.3%
Industrial and others	4	3.3%

90 out of 120 cases had cranial bone fracture. Of this most common is

Frontal bone fracture 45(50%) , parietal 10 (11.1%) , temporal 5( 5.6%) and multiple bone fracture 30(33.3%)(table 3)

**Table3**

Bone	Number	percentage
Frontal	45	50%
parietal	10	11.1%
temporal	5	5.6%
multiple	30	33.3%

When we recorded ocular manifestation we had 135 eye involvement in 120 patients as few patients had both eyes involvements. The commonest manifestation in our study is lid ecchymosis 34(25.1%), followed by conjunctival chemosis 24(17.9%) ,subconjunctival haemorrhage 20 (14.8% ), lid laceration 15(11.1%),pupillary abnormality 10(7.4%) ,orbital floor fracture 9(6.7%) ,globe rupture 4(3%) ,Berlins oedema 4 (3%) , restricted ocular movement 4(3%) Ptois 2 (1.5%) , vitreous haemorrhage 2 (1.5%) , retinal haemorrhage 2(1.5%) ,optic nerve head avulsion 2(1.5%) ,papilloedma 3(2.2%) (table4) Table 4

When we assessed final visual acuity at months, in cranial bone fracture group 60 cases(66.7%) had vision 6/6-6/18 , 12 cases (13.3%) < 6/18 to 2/36, 8 cases (8.8%) had< 6/36-6/60, 3 cases (3.3%) had< 3/60to 1/60, 2 cases(2.2%) had< 1/60 to PL positive, 5 cases (5.6%) had PL negative vision.

In patients without cranial bone fracture 21(70%) cases had 6/6 -6/18 vision, 4 cases (13.3%) had <6/18-6/36, 2 case (6.7%) had <6/36-6/60, 1 cases(3.3%) had <3/60-1/60, 1 case (3.3%) had <1/60 – PL positive , 1 case (3.3%) PL negative.

However when we compared these values though final visual outcome is better in patients without cranial bone fracture, no statistically significant difference was found between two groups .(table5) table 5

## DISCUSSION

We had 120 eyes with 135 ocular manifestation, as some eyes have multiple manifestations.

In our study total male was 84.2% and female 15.8%.This correlated with study of K.Myle et al where they found male was 82.7% and female 17.3%<sup>2</sup> Most common age group in our study is 21-40 year age group who had almost 75% cases. These correlates with study of K Myle et al who had maximum incidence in age group of 21-40 years age group as well (51.5%)<sup>2</sup>

We found that most common cause of head injury in our study is road traffic accident which constitute 78.3% cases , which is slightly higher than that found in study of Yogendral et al (43.19%)<sup>3</sup>

In our study we had 90 cases with cranial bone fracture, of which 50% were frontal bone fracture. This may be due to fact that frontal fracture causes less mortality in compared to other bone fracture.This correlates with study of Kanwal et al .<sup>4</sup>

In this study we found most common ocular manifestation is lid ecchymosis 25%, followed by conjunctival chemosis 17.9%,sub conjunctival haemorrhage 14.8%, lid laceration 11.1%, while other injuries comprises of rest 31.2% cases. This is similar to studies of Bhabna Sharma et al<sup>5</sup> and T O Odebode et al<sup>6</sup>

In this study when we evaluated the final visual acuity , it was found that normal vision of 6/6-6/18 was found in 66.7% cases of cranial bone injury and 70% cases without cranial bone injury. This shows that patient without cranial bone fracture had better visual outcome in comparison to cranial bone fracture group, however the difference was not significant statistically (P> 0.005).Similar findings were obtained in study of Wentao Yan et al<sup>7</sup>.

## CONCLUSION

Road traffic accidents are most common cause of ocular manifestation in head injury, with younger male population at higher risk. The commonest ocular manifestation is lid ecchymosis followed by conjunctival chemosis and subconjunctival haemorrhage. However visual prognosis is better in patients without cranial bone fracture.

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