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Ocular Manifestations of Head Injury in Trauma Patients

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ABSTRACT

This study is conducted in Guru Gobindsingh Hospital, Jamnagar to establish the relationship of different ocular manifestations with the type and site of head injury and to judge the severity of head injury from associated ocular findings. This study finds out in which ways the ophthalmic findings help to decrease overall mortality and morbidity from head injury by early recognition and appropriate measures.

KEYWORDS: Head injury, ocular manifestations, mortality, morbidity.

INTRODUCTION

In the era of industrialization, in India traffic accidents are increasing in frequency, becoming one of the leading causes of head injury and along with it both intraocular and extraocular involvement. In India, more than 100,000 lives are lost every year with over 1 million suffering from serious head injuries. In 1991, 60,000 people were killed in Road Traffic Accidents as compared to 24,600 in 1980.This figure is now closing in on 100,000 deaths per year.

Head injury is one of the commonest disorders seen by doctors in hospital. So understanding pathophysiology facilitates diagnosis and organized management have produced 15-20% reduction in mortality following severe head injury.

Therefore study of ophthalmic features help in diagnosing and confirming the head injury and its probable site of damage and also preventing and treating ocular problems.

AIMS & OBJECTIVES

1. To establish the relationship of different ocular manifestations with the type and site of head injury.
2. To judge the severity of head injury from associated ocular findings.
3. To study the different ocular manifestation in the cranio-cerebral injuries and their frequency of occurrence.
4. To find out in which ways the ophthalmic findings help to decrease overall mortality from head injuries by early recognition and appropriate measure.

MATERIALS AND METHODS

This study was done on randomly selected patient of head injury admitted in G G Hospital, Jamnagar over one year period.

SELECTION OF PATIENTS :

1. All head injury cases (irrespective of presence / absence of ocular involvement), admitted in the surgery unit for observation or active neuro surgical management were included. The severity of trauma and the neurological involvement was incorporated in the Glasgow Coma Scale and correlated with the revised Trauma score.
2. Also those patient of head injury presenting in ophthalmic OPD for ocular complaints were included in the study.

EXCLUSION OF PATIENTS :

1. Those who were kept under observation for ruling out head injury.
2. Patient under local treatment to eyes without head injury.
3. Fracture of the orbit without any cranio - cerebral injuries.

OBSERVATIONS

In our study total 300 cases of head injury were seen over 1 year period of which 182 had ophthalmic findings of which 47 had significant ophthalmic findings like cranial nerve palsies, orbital fractures, intraocular haemorrhage, papilloedema and optic nerve lesions. Following observations are made:

1 : AGE :

In our study distribution of patients as per age was as follows. In the 0-20 year age group there were 82 patients, in the 21-40 age group 158 patients, in the 41-60 year age group 43 patients, in 61-80 year age group 13 patients and in the >80 year age group 4 patients.

2. : SEX:

The sex distribution in our study was as follows: out of 300 patients 244 (81.3%) were male patients and 56 (18.7%) were female patients.

3 : AETIOLOGY OF HEAD INJURY:

In our study etiology of head injury was as follows. Most commonly road accidents 166 cases, assaults 44 cases, occupational injuries 17 cases while falls and others were found in 73 cases.

4 : OPHTHALMIC FEATURES:

Table 1

No.	Ophthalmic Features	No. of Cases (%)
1.	Lid edema and ecchymosis	22 (7.33%)
2.	Subconjunctival haemorrhage and chemosis	17 (5.7%)
3.	Pupillary abnormalities	26 (8.66%)
4.	Cranial nerve palsy • 3rd nerve • 4th nerve • 6th nerve • 7th nerve	 2 (0.66%) 0 (0.00%) 3 (1.00%) 2 (0.66%)
5.	Orbital fractures	22 (7.33%)
6.	Lid contused lacerated wound	26 (8.66%)
7.	Ptosis	4 (1.33%)
8.	Proptosis	4 (1.33%)
9.	Enophthalmos	2 (0.66%)
10.	Punctum and canalicular injury	3 (1.00%)
11.	Total ophthalmoplegia	3 (1.00%)
12.	Papilloedema	10 (3.33%)
13.	Macula: macular oedema macular hole	3 (1.00%) 1 (0.33%)
14.	Retinal haemorrhage	3 (1.00%)
15.	Optic nerve atrophy	2 (0.66%)
16.	Optic nerve avulsion	1 (0.33%)
17.	Retrobulbar haemorrhage	1 (0.33%)

18.	Vitreous haemorrhage	4 (1.33%)
19.	Retinal detachment	1 (0.33%)
20.	Associated ocular injuries Scleral tear Corneal tear Hyphema Uveal tissue prolapse Lens dislocation Traumatic cataract	 4 (1.33%) 3 (1.00%) 3 (1.00%) 4 (1.33%) 1 (0.33%) 1 (0.33%)
21	Total loss of vision	5 (1.66%)
22	Mortality (total) Immediate death Late death	11 (3.66%) 6 5

5 : CORRELATION OF OCULAR SIGNS WITH GLASGOW COMA SCALE AND REVISED TRAUMA SCORE :

TABLE 2

GLASGOW COMA SCALE	REVISED TRAUMA SCORE	NO. OF CASE	OCULAR SIGNS	PROGNOSIS
3	0	2	2	2 Deaths
4-5	1	4	3	1 Death; 2 Poor prognosis
6-8	2	32	22	Fair
9-12	3	52	28	Fair/Good
13-15	4	210	127	Good

In our study correlation of ocular signs with Glasgow Coma Scale was as follows. Out of total 300 cases in 182 cases ocular signs were found, of that 127 cases had Glasgow Coma Scale of 13-15, in 28 cases it was 9-12, in 22 cases it was 6-8, in 3 cases it was 4-5 and in 2 cases Glasgow Coma Scale was 3.

6 : ORBITAL FRACTURE

In our study orbital fracture were found as follows: Medial wall fracture 8 cases, lateral wall fracture in 4 cases, roof fracture in 4 cases, of which optic nerve damage occurred in 2 cases and floor fracture in 5 cases. Orbital fracture were usually associated with proptosis / enophthalmos with chief complaints of diplopia. More commonly detected on CT scan (14 cases) then on x-ray (8 cases) .

DISCUSSION

In India several series of analysis of head injuries have been studied. In our study, total 300 patients of head injury are examined at dept. of ophthalmology, guru gobindsingh government hospital, Jamnagar.

MODE OF INJURY

Mode of injury in our study and in studies done by AR Kulkarni [18] and study done by T O Odebode [19]are as follows:

In our study, leading cause of head injury was found to be vehicular accidents (55%)followed by fall from height(30%) on second place. Similar results were found in study done by AR Kulkarni et al i.e., vehicular accidents (52.5%) and fall (7%) and study done by T O Odebode i.e., vehicular accidents (84.2%) and fall (7%).

SEX:

In our study, males were affected more than females which corresponds with the higher number of head injury in males because of vehicular accidents and assaults. In study done by T O Odebode [19],it was found that 64.9% males and 35.1% females were affected which was similar to that found in our study of 81.3% males and 18.7% females.

AGE:

In our study, highest number of ocular findings were found in second and third decade of life, i.e.,39% and 62% respectively which corresponds to the highest number of head injury in this age group in study done by AR KULKARNI et al of 62% and 24% respectively.

OPHTHALMIC SIGNS AND SYMPTOMS:

Ophthalmic signs and symptoms in head injury in our study and study done by T O Obedabe[19] and study done by AR Kulkarni[18]are as follows:

TABLE 3

	OUR STUDY	AR KULKARNI et al	T O Odebode et al
LID OEDEMA & ECCHYMOSIS	22%	27%	29.8%
SUBCONJUNCTIVAL HAEMORRHAGE	17%	19%	36.8%
CORNEAL TEAR	1%	1%	8.7%
PUPILLARY ABNORMALITIES	8.66%	6.5%	21%
PTOSIS	1.33%	1.5%	17.5%
DIPLOPIA	1%	0%	7%
PROPTOSIS	1.33%	3%	0%

ORBITAL FRACTURES:

In our study, orbital fractures are frequent 22cases (7.33%) as compared to the study done AR Kulkarni[18] et al which shows 12%.

GLASSGOW COMA SCALE:

Relationship between Glasgow Coma Scale and Mortality is compared between our study and study done by Brookman et al [20] and and Phuenpathom et al [21]. The results were are as follows:

In our study, mortality of 100% was found in patients with GCS score of 3 and below and good prognosis(0%) in patients with GCS score of 13-15 which was similar to study conducted by Brookman et al and and Phuenpathom et al of 100% and 0% respectively.

CONCLUSION

1. Significant ophthalmic manifestations in head injury are frequent (15.6%)
2. They are not related to age and sex.
3. Mortality is higher in cases with ophthalmic manifestation (13.5%) than in general head injury (4.5%).
4. Ophthalmic findings suggest severe head injury (33.3%) had Glasgow Coma Scale (GCS) less than 8/15.
5. Ocular complications are frequent in orbital fracture.
6. Hence we think and strongly recommend helmet wearing for all the two wheeler drivers as it minimizes the risk of severe head injury.

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