

Ocular manifestations of head injuries

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Abstract

Background: Aim: Find out the prevalence and various ocular manifestations in head injury patients. **Material and Methods:** It is a prospective study between January 2016 to July 2016 conducted at BTGH, MRMC, Kalaburagi. Total of 150 head injury patients were evaluated. **Results:** Out of 150 patients with head injury 110 patients presented with ocular manifestations which accounts to 73.3%. Majority of patients were in age group of (20-40) 56.7%. More common in males 68% compared to females. Common cause of head injury RTA 58%. **Conclusion:** Mortality is higher in cases with ophthalmic manifestation. Timely intervention and proper referral can not only save the life but save the sight also. Strictly following traffic rules can save life and sight.

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major public health problem and occurs most commonly in teenagers and young adults who would otherwise have been productive members of society.^{13,14} The most common cause of TBIs is Motor Vehicle accidents.^{3,15,13,16,17} The socioeconomic impact of ocular trauma can hardly be overestimated as those affected often have to face loss of career opportunities, major lifestyle changes and occasionally permanent physical disfigurement.² Ophthalmic trauma related to motor vehicle accidents (MVA) accounts for a significant percentage of ocular injuries, being the second most significant cause after occupational accidents.¹⁸

Clinical Material

This is a prospective study conducted in the Department of Ophthalmology, Basaveshwara Teaching and General Hospital attached to H.K.E. Society's Mahadevappa Rampure Medical College, Kalaburagi for a period of 7 months (January 2016 – July 2016). Total 150 patients were included in the study. Patients in were in the group of 1 to 60 years. Informed consent was taken.

METHODS

All 150 patients were evaluated. Thorough ophthalmic evaluation for signs and symptoms with torch light, visual acuity bed side. Once the patients were stable details ocular examination under slit lamp was done. Fundus examination done. CT Scan was done.

INTRODUCTION

Ocular trauma is the cause of blindness in more than half a million people worldwide and of partial loss of sight in many more, and it is often the leading cause of unilateral loss of vision particularly in developing countries.¹ The role of ocular injuries secondary to head trauma in the causation of blindness has become a subject of immense importance.² Often times, when the eye is examined as part of neurological assessment of a patient with head injury, the purpose is mainly to gauge the severity of the head injury itself.^{3,4} Disorders of eye movement are thought to result from direct trauma to orbital contents, cranial nerves, and other brain areas.⁵ Head injuries are frequently associated with ophthalmic manifestations and consequent morbidity.⁶ There are several studies of patients with head injuries in Rehabilitation units being referred for missed Neuro-ophthalmic findings.^{7,8,9,10,11,12,6} Head injury is a

RESULTS

In this study number of patients with ocular manifestations was 110 out of 150 patients which accounts to 73.3% prevalence. (Table 1) In this study 11% patients belong to age group (1-20), 56.7% under (20-40) age group, 29.3% (40-60) age group, 6% under (>60) and above (Table 2). Common age group being (20-40) 56.7%. (Table 3) shows high incidence of head injury with RTA being 58%. Followed by assault 26%, falls 9.3% and others 6.7%. (Table 4) shows sex distribution, which is more common in males as compared to females M:F ratio (68% : 32%).

Table 1: Number of patients and ocular manifestations

| Sl. No. | Total no. of patents | No. of patients and ocular manifestations | percentage |
|---------|----------------------|---|------------|
| 1. | 150 | 110 | 73.3% |

Table 2: Age distribution

| Sl. No. | Age | Percentage |
|---------|-------|------------|
| 1. | 1-20 | 11% |
| 2. | 20-40 | 56.7% |
| 3. | 40-60 | 29.3% |
| 4. | >60 | 6% |

Table 3: Most common cause for head injury

| Sl. No. | Common cause | Percentage |
|---------|--------------|------------|
| 1. | RTA | 58% |
| 2. | Assault | 26% |
| 3. | Falls | 9.3% |
| 4. | Others | 6.7% |

Table 4: Sex distribution

| Sl. No. | Male | Female |
|---------|------|--------|
| 1. | 68% | 32% |

DISCUSSION

Subconjunctival hemorrhage and ecchymosis was the common finding with anterior segment involvement 43 patients as compared to other anterior segment findings (Figure – 1). Traumatic neuropathy in 15 patients followed by papilledema 12 patients was the common posterior segment finding (Figure – 2). Cranial nerve palsy common was oculomotor palsy followed by Trochlear nerve palsy and third lateral rectus palsy (Figure – 3). Subarachnoid and subdural haemorrhage was most common CT finding 4.3% and 0.5% (Figure – 4).

In many series worldwide, traffic accident constitutes the leading cause of head injury. As was found in our study, high velocity impact due to RTA is the commonest cause of head injury reported.¹¹ With young men most frequently involved.⁶ Trauma patients often have multiple injuries including ocular involvement. Several retrospective studies have reported neuro-ophthalmic findings a few months after head trauma.¹⁰ As compared to other retrospective studies which have included patients referred specifically for ophthalmic problems, even beyond 12 months after the initial head injury. Moster *et al.* reported III cranial nerve palsy in 30%, IV cranial nerve palsy in 26% and VI cranial nerve palsy in 22% cases. Mariak, after brain autopsy in 12 patients, found serious cranial nerve involvement in 75% of the fatal closed head injury cases.



Figure 1

Figure 2

Figure 3

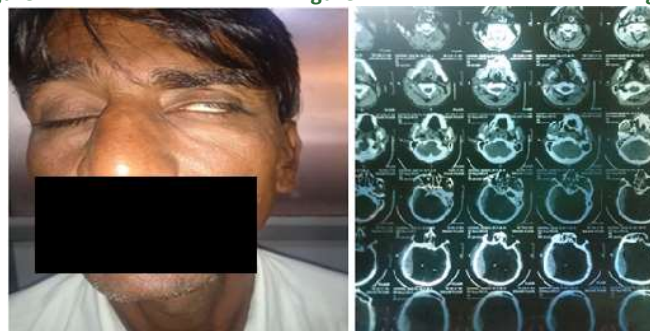


Figure 4

Figure 5

The mechanism of injury for optic neuropathy can be direct, indirect, or due to papilloedema.⁶ The proportion of head injuries – 86% resulting from RTA is higher than 44%.¹⁹ NSD Raju reported 47.5% cases because of RTA. Head injuries can be defined as those in which there is evidence of involvement of the brain including concussion, with loss of consciousness or post-traumatic amnesia, neurologic signs of brain injury or skull fractures. The Glasgow coma score and the Revised trauma scores are commonly used in grading the severity of head injury. The eyes are often involved in head injury (directly and indirectly) with neuro-ophthalmic deficits.^{2,7,13,8,9,10,18,11,12,6} Trauma patients often have multiple injuries including ocular involvement. Several retrospective studies have reported neuro-ophthalmic findings a few months after head trauma.^{7,13,8,9,11,12,6} Comprehensive ocular assessment can contribute significantly to the overall understanding of the acute injury and the prognosis of the patient as well as ocular motor involvement, profoundly affecting their rehabilitation.¹³ Bilateral dilated nonreactive pupils can also be due to inadequate brain perfusion.^{20,13} Moster *et al.* reported III cranial nerve palsy in 30%, IV cranial nerve palsy in 26% and VI cranial nerve palsy in 22% cases.

CONCLUSION

Ocular manifestations are frequent in patients of head injury. Morbidity and mortality rates are high in patients with eye involvement. Head injury with ocular signs and neurodeficit have worse prognosis with irreversible visual damage.

Take Home Message: Head injury with eye involvement should be carefully evaluated so that sight of the patients can be saved.

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