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A Case Study of Ocular Manifestations in Head Injuries

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Abstract
The present study comprises 100 patients admitted in head injury unit (NEUROSURGERY department) of government general hospital Guntur.
Aims And Objectives Of Study
- *To study the incidence of ophthalmological manifestations in head injuries*
- *To study the distribution of age and sex incidence in these cases*
- *To study the prevalence of ocular manifestations in head injuries & eye involvement in rural & urbanareas.*
- *To study the incidence of probable aetiology.*
- *To study the different types of involvement of layers of eyeball and its contents,optic nerve and other Orbital contents including extraocular muscles in head injuries.*
- *To study the incidence of fractures in orbital margins and walls in head injuries]*

Inclusion Criteria
- *Patients with history of head injury with or without visual complaints*

Exclusion Criteria
- *Fracture of the orbit without any craniocerebral injuries.*
- *Patients with glassgow coma scale less than 5,patient is on ventilators and not cooperative patients*

Methodology: *The clinical examination comprises of general and CNS examination and local ocular examination.with special reference to optic nerve functions*
Type Of Study: *Retrospective study.*
Place Of Study: *Government general hospital, GMC,Guntur.*
Period Of Study: *January 2015 to january 2016*

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I. Classification of head injuries..

(Morphological)
•Scalp injuries
•Skull fractures
•Skull vault fractures (open\closed, linear\comminuted, depressed \non-depressed, Ping-Pong fracture)
•Skull base fractures
•Brain injuries
•Direct injury (primary)

1. Focal:
•Cerebral Contusion
•Intracranial Hemorrhage (EDH, SDH, SAH, ICH, IVH)
•Direct trauma to cranial nerves or blood vessels

2. Diffuse:
•Concussion and Diffuse Axonal Injury
•Indirect injury (secondary) ??

Ocular Manifestations
•Lid edema and echymosis
•Subconjunctival haemorrhage & chemosis.
•Corneal abrasions and foreign bodies
•Anterior chamber depth variations,
•Pupillary abnormalities.
•Cranial nerve palsy
•Orbital fractures.
•Eyelid laceration,punctum &canalicular injury

Conditions of the pupils:
Three types of pupillary changes are of clinical importance.
•Hutchinson's pupil or Cook's pupil
•Absolute paralytic mydriasis
•Pseudo-reflex traumatic pupillary paralysis of Behr

Ist stage- Ipsilateral miosis	-Normal on opposite side
(III Nerve irritation)	
IInd stage- Ipsilateral mydriasis	-Contralateral miosis
(III nerve paralysis)	(III Nerve irritation)
IIIrd stage-Dilated and fixed pupil	-Dilated and fixed pupil
(III Nerve paralysis)	(III Nerve paralysis)

II. Cranial Nerve Affections

•**Injuries to visual pathways**
Optic nerve injury, optic nerve chiasmal injury, optic tracts injury, lateral geniculate body injury, optic adiations injury, cortex injury.
Optic nerve injury:
It is very rare 1% to 15%, usually unilateral and is involved in one of the three mechanisms.
•Direct involvement of the nerve in a fracture line with disruption
of fibres.
•The blood supply to the nerve is compromised by shearing lesions or nerve fibres may be damaged. •Torsion of the nerve itself. It results due to trauma to the frontal or frontotemporal region Features: immediate loss of vision. Unilateral mydriasis, not reacting to light. Fundus – appears normal for 2-3 weeks after injury. Later signs of primary optic atrophy set in. recovery occurs within few days, otherwise the prognosis is poor.
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Traumatic retinopathy of purtscher – also called traumatic liporrhagia retinae or traumatic retinal angiopathy is known to follow accidents and may follow a blow on the orbit. The clinical picture becomes evident usually 2-4 days after the accident characterized by a number of islands of whitish - grey opacity, oedema, numerous near the macula, associated with hemorrhages, small, sometimes subhyaloid but often profuse, so that the picture resembles a thrombosis of a retinal vein. Even vitreous haemorrhage can occur if the internal limiting membrane is elevated. After 4-6 weeks, these patches tend to fade away and fundus may appear normal after few months. Purtscher's theory on the causation of retinal lesion is that the rush of cerebrospinal fluid forced from the subarachnoid space past the disc, along the perivascular sheaths of the retinal vessels and hence into the retinal tissue by the raised pressure generated by a head injury

Ocular feature:
1.total prolapse of right eyeball from orbital cavity.
2.traumatic disruption of right optic nerve.
3.. fracture roof of the right orbit. C.T scan revealed fracture roof of the left orbit There was a left frontoparietal depressed frcture. haemorrhagic contusion in left frontal lobe.patient was kept

Ocular feature:

1.echymosis and subconjunctival haemorrhage in the right eye with fracture floor of the right orbit without entrapment of muscles.

C.T scan showed fracture of floor with hemosinus in maxillary sinus with no entrapment of inferior rectus.

III. Summary And Conclusion

The incidence of ocular manifestations in head injuries in present study is 20% Fracture of skull bones was noted in 20% of cases and orbital fractures was noted in 5.95% cases. The most common ocular complication in this study are subconjunctival haemorrhage with chemosis,ecchymosis and oedema of lids.the majority of these cases are due to local injury resulting in so called black eye. Fractures of base of skull usually manifested in the form of extension to roof of the orbit indicated by subconjunctival haemorrhage and chemosis.

Dilation of pupil is the commonest among pupillary abnormalities in head injuries.Bilaterally dilated and fixed pupil is a grave sign and indicates bad prognosis for life Extraocular muscle palsies occurred in 2.7% cases, abduscens nerve being the common nerve implicated. Majority of extraocular muscle palsies improved rapidly indicating the underlying pathology may be contusion or swelling of the nerve and not a permanent damage Optic nerve implication was in the form of optic atrophy due to avulsion of optic disc and due to traumatic disruption of the optic nerve.

There is a significant preponderance of males to females, as males are more exposed to outdoor

activities, hardworking and high risk jobs. There is a 3:1 male to female ratio in the present study. Among various age groups 15- 30 yr. age group is the most commonly affected in head injuries. This is due to this group being the major earning group of society and their exposure to outdoor activities and sports. Some patients with extradural haemorrhage and intracerebral haemorrhage have recovered after operative intervention. Advent of MRI and C.T scan of brain has launched early diagnosis and timely intervention when needed. Ophthalmic intervention in these patients was in the form of local antibiotic drops,ointments and surgical procedures wherever necessary. All these ocular manifestations served as a guide for diagnosis and prognosis of the patients with head injuries.

Aetiology Of Head Injuries

	Road traffic accident	Assault	Fall	Sports injury	Occupational injury
Present study	47%	40%	10%	1%	2%

Incidence Of Ophthalmic Manifestations In The Lids And Anterior Segment Of The Eye In Head Injuries In Present Study

s.no.	Feature	No. of cases	Percentage
1.	Lid edema with echymosis	17	17%
2.	Subconjunctival haemorrhage with echymosis	13	13%
3.	Conjunctival tears	1	1%
4	Corneo-scleral tears	0	0%
5	Ptosis due to edema	2	2%
6	enophthalmos	1	1%
7	Hyphema	1	1%

***Incidence* Of Exposure Keratitis In Present Study**

Feature	Number of cases	Percentage
Exposure keratitis	6	2.1%
a)Due to coma	4	1.4%
b)due to 7th nerve injury	2	0.7%

Incidence Of Orbital Fractures In Present Study

Feature	Total no of cases	Percentage
Total no of patients with orbital fractures	17	5.95%
Fracture roof of the orbit	3	1.05%
Fracture floor of the orbit	3	1.05%
Fracture lateral wall of the orbit	10	3.5%
Fracture medial wall of	2	0.7%

Cause Of Unilateral Dilated Fixed Pupil In Present Study

Feature	Number of cases	Percentage
Unilateral dilated & fixed pupil	7	2.45%
Third nerve palsy	2	0.7%
Extradural haemorrhage	4	1.4%
Cause unknown	1	0.35%

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