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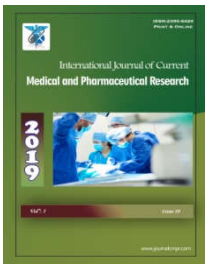

Research Article

OCULAR MANIFESTATIONS OF BLUNT TRAUMA IN A TERTIARY CARE CENTER – A CLINICAL STUDY

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ABSTRACT

Objective: To analyse the ocular manifestations of blunt trauma and to assess the visual acuity following blunt injury. **Materials and Methods:** This is a descriptive cross sectional study of 42 patients with blunt ocular trauma attending the emergency and outpatient services of Rajah Muthiah Medical College and Hospital, Annamalai University from October 2017 to September 2019. **Results:** Out of the 42 patients, 37(88.1%) were males and 5(11.9%) were females. Most common age group was 16-35 years (47.6%). The commonest type of ocular injury was peri-oribital edema and ecchymosis (85.7%) followed by subconjunctival haemorrhage (54.5%). Most common mode of injury was RTA (59.5%). **Conclusion:** The most common cause of blunt ocular trauma is RTA and the most common structure involved was eyelids followed by conjunctiva. Ocular trauma still remains one of the major causes of preventable monocular blindness in India.

INTRODUCTION

Traumatic injuries to the eye remains a leading cause of visual morbidity and blindness of which blunt trauma form the major part of ocular injuries. Globally more than half a million blinding injuries are occurring every year. Of which about 1.6 million are blind from ocular trauma, 2.3 million are bilaterally visually impaired, followed by 19 million with unilateral vision loss world wide.[1] Most of these can be prevented by appropriate protective wear. Ocular damage by blunt trauma is caused by a coup and a counter coup mechanism which was first introduced to explain brain damage caused by blunt trauma to head by Courville.[2,3]

Extent of injury suffered is determined by

1. The amount of energy that is transmitted to the globe and orbit.
2. The physical characteristics of the offending object.
3. And the location of the impact area on the globe.[4]

Although the impact is taken primarily by the lens – iris diaphragm and the vitreous base the damage can also be a far as the posterior pole. Blunt trauma may also result in long term effects.

Hence a proper assessment starting from the time of presentation, nature of the injuring agent, extent of involvement and complications were done with the available clinical and investigational means. This would help in the effective management of ocular trauma and a timely intervention can prevent loss of vision.[5]

MATERIALS AND METHODS

It is a descriptive cross-sectional study of 42 patients with blunt ocular trauma from October 2017 to September 2019 attending the emergency and outpatients services of Rajah Muthiah Medical College and Hospital, Annamalai Nagar, Chidambaram, Tamil Nadu.

Inclusion Criteria

1. Patients with blunt ocular injuries.
2. Above 5 years of age.

Exclusion Criteria

1. Patients with open globe injuries.
2. Severely injured patients.
3. Patients with reduced visual acuity due to pre-existing ocular disease.
4. Patients unfit for a thorough ocular examination.

Based on the inclusion criteria, study population was selected and a detailed clinical examination, assessment of visual acuity, slit lamp examination, binocular indirect ophthalmoscopic examination, and tonometry was done. X-ray

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of facial bones and CT-Scan of the brain and orbit was done in relevant cases.

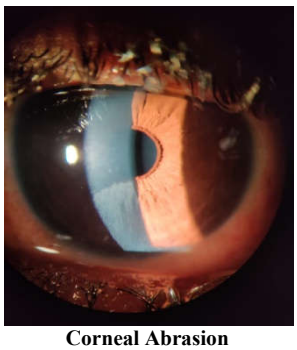
RESULTS

Of the 42 patients in the study with blunt ocular trauma, 37 were males and 5 were females. The commonest age group involved were 16-35 years. Majority of the subjects clinically presented with peri-orbital edema and ecchymosis followed by sub-conjunctival hemorrhage.[7] Thirty patients had 6/6 visual acuity, 11 patients had 6/9 to 6/18 visual acuity and 1 patient had 1/60 visual acuity. Right eye was involved in 25 cases and left eye in 17 cases.

DISCUSSION

Blunt trauma can affect any structure of the eye causing structural and functional damage. Blunt objects contribute to the largest proportion of eye injuries (30%).[6,7] Young males being most commonly affected and ocular trauma is the most important cause of mono-ocular blindness resulting in about 19 million cases in an year.[8,9] Out of the 42 subjects 37 were males and 5 were females. Males were accounting for majority of the cases.[10,11,12] In our study, road traffic accidents constitute the major cause for blunt ocular trauma and similar findings were observed by R.N. Kushwaha, Rashmi Rastogi *et al*., in 2013.[13,14]

Vitreous Haemorrhage



Corneal Abrasion

Peri-Oribital Edema ecchymosis and Sub Conjunctival haemorrhage

Traumatic Cataract

Various manifestations of Blunt Ocular Trauma

In our study we observed most of the patients presented to us with peri-oribital edema and ecchymosis 36 eyes, followed by sub-conjuntival haemorrhage 24 eyes, similar to a study done by S.G. Pai.[15] In our study majority of the patients did not have visual defects. Though some of the patients who had poor visual acuity at the time of presentation improved well on prompt and appropriate treatment.[16]

Study Comparison

Table 1 Age Distribution of Patients Presenting with Blunt Ocular Trauma

Age (in Years)	No. of Patients	% (Percentage)
<15	2	4.8
16 – 35	20	47.6
36 – 45	12	28.6
>46	8	19.0
Total	42	100.0

Table 2 Sex Distribution of Patients Presenting with Blunt Ocular Trauma

Gender	No. of Patients	% (Percentage)
Male	37	88.1
Female	5	11.9
Total	42	100.0

Table 3 Type of Ocular Injury in Patients with Blunt Ocular Trauma (42 patients, 44 eyes)

Anatomical Structure Involved in Injury	Type of Ocular Injury	Number of Eyes
Eye Lids	Pre-orbital Edema andEcchymoses	36 (85.7%)
	Abrasion andLaceration	5 (11.3%)
Conjunctiva	Sub Conjunctival Haemorrhage	24 (54.5%)
	Conjunctival Tear	1 (2.2%)
Cornea	Abrasion	4 (9.0%)
Iris and Pupil	Traumatic Anterior Uveitis	4 (9.0%)
	Traumatic Mydriasis	2 (4.5%)
Lens	Cataract	1 (2.2%)
Fundus	Commotio Retinae	5 (11.3%)
	Vitreous Haemorrhage	1 (2.2%)
Orbital	Orbital Wall Fracture	1 (2.2%)

Table 4 Aetiology of Trauma in the Patients in the Study of Blunt Ocular Trauma

Aetiology	No. of Patients	Percentage
Road Traffic Accidents	25	59.5
Assault	5	12.0
Self Fall	8	19.0
Stick Injury	4	9.5
Total	42	100

Table 5 Comparison of Our Study Results with that of Study by Pai SG

Anatomical Structure Involved in Injury	Type of Ocular Injury	Our Study	Study by Pai SG
Eye Lids	Pre-orbital Edema and Ecchymoses	85.7%	62.5%
	Abrasion and Laceration	11.3%	31.2%
Conjunctiva	Sub Conjunctival Haemorrhage	54.5%	37.5%
Cornea	Abrasion	9.0%	21.8%
Iris and Pupil	Traumatic Mydriasis	4.5%	9.3%
Orbital	Orbital Wall Fracture	2.2%	6.25%

Table 6 Comparison of Result in Our Study with that of Elangovan Marudhamuthu

		In our study % of results	In the Study by Elogovan Marudhamuthu % of results
Sex Distribution in Ocular Trauma Patients	Male	88.1%	85.33%
	Female	11.9%	14.67%

CONCLUSION

Blunt trauma by far contributes to the major proportion of ocular injuries. In our study majority were males 88.1%, RTA was the commonest mode of blunt ocular trauma constituting 59.5%. Eye lids was the commonest structure involved followed by the conjunctiva. Ocular injuries can be reduced by

using protective eye gears, helmet with visor and other appropriate preventive strategies to address each risk factor and their prevention in the future.

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