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Profile of Ocular Trauma in Patients Under the Age of Sixteen Years in Allied Hospital, Faisalabad

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ABSTRACT

Aims & Objectives: Evaluation of epidemiological contributing factors in occurrence of ocular trauma in patients under the age of 16 years. **Study Design:** Descriptive and analytical study carried on 216 children. **Period:** 13-02-2014 to 26-12-2015. **Setting:** At Ophthalmological Department, Allied Hospital, PMC, Faisalabad. **Patients and Methods:** The patients with eye injury who presented to the ophthalmological Department of Allied Hospital, PMC, FSD from 13-02-2014 to 26-12-2015 were included in the study. The Activity at the time of injury, place of injury, identifiable objects causing trauma, age 1-16 years, any sex, use of eye protectors, were noted. **Results:** Out of 216 patients, there were 166 male (76.85 %) while female were 50 (23.15 %). There were 76 patients having age between 0-5 years while 78 (36.11 %) were between 6-10 years of age. Out of 216 only 62 (28.7 %) patients were of age between 11 years to 16 years. The injuries due to knife and scissors, occurred in home and were the commonest (17.59 %). The injuries occurring due to fire cracker and vegetable matter outside home were also common 16.20% and 13.89 % respectively. The fist and hand bite injuries in this group were least common (0.93 %). In our setting commonest eye injuries involving corneo-scleral were (35+25) (27.78 %). The frequency of subconjuctival hemorrhage was 11.11 %. The cases having lid tear and canicular cut were 6.48 %. **Conclusion:** Ocular trauma is an important cause of preventable visual morbidity particularly among younger people who are at the lower risk for chronic ocular diseases. Pediatric ocular trauma is a common cause of ophthalmic consultation.

Keywords: Pediatric ocular trauma, House hold objects, Prevention of ocular trauma

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INTRODUCTION

The unilateral blindness in children is rare but ocular trauma is the commonest cause of acquired unilateral blindness.[1]

The children are more prone to get eye injuries due to their immature motor skills and immature common sense.[2]

The thirty five percent of all children with ocular trauma is seen below age of seventeen years. [3]

Usually males are more aggressive naturally and proportionally more prone to trauma. [4]

The ignorance and lack of responsibility also leads to indirect damage to the eye resulting in loss of vision, This condition may result into poor visual outcome (Dense amblyopia).[5]

The children are more prone to get injuries because of their inability to avoid hazards.[6] The children and infants, less than 3 years of age sustain fewer injuries due to close parental supervision.[7]

Sports related injuries are common in children from 5-15 years of age. [8]

The ensuing visual disability has significant emotional, psychological and socio economic impact on the individual person, family and to the society as a whole. [9]

METHODOLOGY

Study Design: This study was prospective, observational, descriptive and analytical case series.

Inclusion Criteria: Conducted on 216 cases, aged less than 16 years and having H/O ocular trauma who had admitted to Ophthalmological Department Allied Hospital, Punjab Medical College Faisalabad.

Exclusion Criteria: The patients with old trauma and aged above 16 years and less than 2 months were excluded from the study.

Period: 13-2-2014 to 26-12-2015.

Methods: Detailed history including type of work or play or game, time of injury, place of injury, and identifiable objects was taken. The patients were enquired either protective glasses were used or not.
All patients were examined in detail including, visual acuity at the time of presentation. Children less than 2 years were examined using fixation and follow test pattern while children between 2-5 years were examined on Cardiff visual acuity charts, key pictures and Shereden Gardner Charts. The children above 5 years were examined with Snellen's Chart and illiterate 'E' chart. The ocular examination was done with direct ophthalmoscope, Retinoscope and slitlamp (either of convential or handheld).
Indirect Ophthalmoscope was used when needed. B-Scan was used in cases of opaque media. The non-co-operative or very young children were examined under sedation or under general anesthesia. The insignificant patients were treated and discharged. (Corneal foreign bodies, subconjuctival hemorrhage and periorbital swelling etc). Patients with simple corneal or conjuctival abrasions with normal anterior chambers were treated with only antibiotic and lubricants drops. The patients with uveitis were treated with topical steroids and cycloplegic drops.
The children with hyphema were treated with head elevation, lowering of IOP and when needed AC was washed under aseptic techniques in operation theatre and under general anesthesia.
All corneal tears were repaired with 10/0 Nylon and scleral tears with 6/0 vicryl. The lid tears were repaired with 6/0 vicryl. Caniculus rupture were repair with vicryl 6/0 and intubation. In cases of multiple ocular structure damage, primary globe repair was done as early as possible and further management was done according to severity and residual structural condition.
The long-term complication as PCO, dislocation of IOL, failed trabeculectomy or other secondary procedures were not included in this study. The detail of surgical procedures and final visual outcome was also not included in this study.

RESULTS

This study comprised of 216 patients, with age between 0 to 16 years who were admitted to ophthalmological ward for ocular trauma. Minimum age of patients was 2 months while maximum age was 16 years (Table 2). Out of 216 patients, male were 166 (76.85 %) and female 50 (23.15 %) (Table 1).

Table 1: Gender frequency blew 16 years

Gender	No. of Patients	%age
Male	166	76.85 %
Female	50	23.15 %
Total	216	100 %

Table 2: Age frequency

Age Years	No. of Patients	%age
0-5	76	35.19
6-10	78	36.11
11-16	62	28.70
0-16	216	100 %

Table 3: Causative agents

Causative Agent	No. of Patients	%age
Vegetative Agents	30	13.89 %
Stones	8	3.70 %
Ball/ Blunt Trauma	20	9.25 %
Toys (Toy's Car)	6	2.78 %
Plastic Pallet	6	2.78 %
Wooden Stick	20	9.25 %
Fire Cracker	35	16.20 %
Needle (Syringe)	5	2.31 %
Fist + Hand	2	0.92 %
Knife / Scissors	38	17.59 %
Iron Rod	5	2.31 %
Animal Horn/ Bird Break etc	5	2.31 %
Pencil	8	3.70 %
Nail	4	1.85 %
R.T.A	6	2.78 %
Chemical Injury	8	3.70 %
Glass	4	1.85 %
Fall from Stairs/ Bed	6	2.78 %
Total	**216**	**100 %**

The right eye was affected in 120(55.5 %) while left eye was affected in 70(37.41 %) both eyes were affected in 26(12.04 %) (Table 5). Knifes and scissors injury were most common 38(17.59%). Next occurrence was firecracker 35(16.20%). The trauma due to vegetable matter was 30(13.89%) while wooden stick 20(9.25%) and stone injuries 8(3.70%). The injuries due to chemical agents were 8(3.70%) but these injuries involved both eyes. (Table 3)

In addition to chemical agents, the fire crackers and RTA injuries involved both eyes mostly. The frequency of blunt trauma was 20(9.25%). The other agents causing trauma are seen in the table 3. The corneo-scleral injuries were most common findings 35+25=60, (27.78%). The next finding was subconjuctival hemorrhage 24(11.11%), the cases showing hyphema were 12(5.56%) while lid tear 10(4.62%), Ecchymosis 10(4.62%), smashed eye 10(4.62%) and vitreous hemorrhage was seen in 11 cases (5.09%).

The multiple structure damage was seen in 16 cases (7.40 %). (Table 4)

Table 4: Distribution of ocular findings

Ocular Injury Findings	Frequency	%age
Lid Tear	10	4.62 %
Lid Tear + Caniculus Tear	4	1.85 %
Ecchymosis	10	4.62 %
Sub-conjunctival hemorrhage	24	11.11 %
Cornea Tear	35	16.20 %
Scleral Tear	25	11.57 %
Hyphema	12	5.56 %
Corneal Abrasions	15	6.94 %
Corneal FB	8	3.70 %
Cornel Prolapse	14	6.48 %
Cataract	6	2.78 %
Sub-luxated Lens	5	2.31 %
Dislocated Lens	3	1.38 %
Vitreous Hemorrhage	11	5.09 %
Retinal detachment	4	1.85 %
Glaucoma	4	1.85 %
Smashed Eye	10	4.62 %
Multiple ocular Injuries	16	7.40 %
Total	**216**	**100 %**

Table 5: Eye involvement frequency

Right Eye	120	55.55 %
Left Eye	70	32.41 %
Both eyes	26	12.04 %
Total	**216**	**100 %**

Table 6: Place of injury

Place of Injury	No.	%age
Home	80	37.04 %
Play ground	70	32.41 %
Street	30	13.89 %
School	20	9.26 %
Others	16	7.41 %
Total	**216**	**100 %**

Table 7: Time of injury

Time	No.	%age
Morning	170	78.70 %
Evening	46	21.30 %
Night	0	0
Total	**216**	**100 %**

Table 8: Comparison of ocular trauma

	Study in PJMHS	%age	Study in eye Dept, AHF	%age
Total Patients	200	100	216	100
Male	131	65.5 %	166	76.85 %
Female	69	34.5 %	50	23.15 %
Right Eye	97	48.5 %	120	55.55 %
Left Eye	94	47 %	70	32.41 %
B/L	9	4.5 %	26	12.04 %
Household	81	40.5 %	80	37.04 %
Blunt Trauma	43	21.5 %	20	9.25 %
Sports Injury	39	19.5 %	80	37.04 %
R.T.A	29	14.5 %	6	2.78 %
Age	(14-15) 81	40.5 %	(11-16) 62	28.70 %
Age (6-10)	119	59.5 %	78	36.11 %

Most of the injuries occurred in home 80(37.04%) (Table 6), while 170(78.70%) occurred in the morning (Table 7).

DISCUSSION

The Allied Hospital, Punjab Medical College, is an only territory care, teaching hospital in Faisalabad Division. Faisalabad is situated in center of Punjab and it provides territory facilities to adjacent district of Punjab. Similarly the Eye department of this hospital is a well-equipped department, having all the diagnostic and management facilities. The insufficient allocation of resources to different levels of services and different geographical regions could be responsible for patients seeking treatment outside their districts.

The current report is the part of study gathering local epidemiological data on ocular injury. To our knowledge this is first survey on ocular injuries in an industrial city. The second part of study may be the management and visual or cosmetic outcome. This was not included in our study.

As a physical distance to facilities is a key determinant for access, so overcoming this outreach problem or better transport and communication networks is important. [10]

The ocular trauma is the leading cause of acquired monocular blindness in young patients. [11]

The children are susceptible to trauma due to their immature mind and less common sense.

A marked preponderance of injuries was seen in 6-10 years of age group in studies of Al-Badar, Azab in north Jordan, int. Ophthalmology 1998. [12] We also found more cases of ocular trauma in age group of 6-10 years (78) 36.11 %. The rate of ocular trauma in children between 0-16 years was 8% in a study conducted in Jong Kong in 2004.

In our study the male were 166 (76.85%) while female were 50 (23.15 %). In a study the "epidemiological evaluation of penetrating ocular trauma in patients under the age of sixteen" by Dohghan A, Rezaetil L etc. found that the boys were 70 %. [13] This is similar to our study.

The injuries due to knife and scissors was most common 38 (17.59 %) in this study. These two instruments are commonly present in home and easily accessible to the children. So the home was common place of injury in this age group. Mishandling of domestic cleansing solutions and pharmacological lotions was single most important cause of eye injury at house 15 % in a study in Hong Kong.[14]

The strong associations of ocular trauma with younger age, male gender have been consistently documented in other localities.[15] This data, however, may reflect bias toward more minor cases who could not attended in our setting and might be treated elsewhere in other clinics or private hospitals. So there may be a strong chance of under reporting due to inaccurate calls.

Contrary to the belief that home is a safe place for children we saw most of injuries were found at home in our study. Cases of domestic injuries varied including falls, household work, domestic chemicals, pharmacological agents, knives, scissors, syringe needles, pencils, Gharo's straw, beak of hen and domestic sports instruments. The lack of adult's supervision may be an important factor in household injuries.

Our results and comparison was similar to the results of study of "frequency and type of ocular trauma" by Abdul Ghafoor, Muhammad Waseem, Shoukat Ali Khan in PJMHS, Jan March, 2016.[16]

SUGGESTIONS

1. Safety awareness and the improved design of safety goggles should be advised. The projectile injuries often occur in predictable situations. So improved and modified design of goggles can prevent such injuries.
2. Public education concerning ocular safety precautions in workplace should be arranged. Also public should be educated for use and sale of consumer products, addressing potential home hazards due to chemical or pharmacological products. (Sprays, insecticides pointed or cutting instruments)
3. The presence of adults or parental supervision at the time of play or work should be insured.
4. The parents should review their homes to ensure that dangerous items are kept out of the reach of small children.
5. Empty syringing, baby guns, scissors, knifes, nail cutters, hammers, etc should be kept away from reach of kids.
6. Small kids or babies should be kept asleep at safety places, avoiding dangers from birds, mouse, cats and dogs, etc.
7. The general practitioners or clinicians should be advised for early and prompt referral of injured patients.

8. The child labor should be discouraged and prevented law fully.
9. Fire crackers and blast producing agents should be banned,
10. The insufficient allocation of different levels of services at different sites should be corrected.

CONCLUSION

This paper presents the epidemiological survey of ocular trauma and ocular findings in 216 children below age of 16 years. The particular attention was paid on the cause of trauma and details of the circumstances or agents causing injury. Although this was not a population based survey, the high incidence of injury was noted in patients presenting in our department.

The ocular trauma remains an important cause of preventable visual morbidity and blindness, particularly among younger people who are at lower risk for chronic ocular diseases. This epidemiological data concluded a better understanding of identifiable risk factors, hopefully leading to more effective preventive measures.

DISCLAMER

- There is no financial support and sponsorship in our study.
- : There is no conflict of interest in our study.
- : The work was carried out in collaboration between all authors.

: The study theme was to provide awareness to parents, children, adults, government official to ensure measures and to provide safe workplace to prevent ocular trauma.

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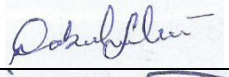
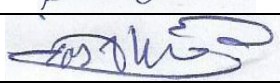
Muhammad Nabeel Sultan	Proof Reading and Manuscript Writing	
Dr. Ejaz Ahmed Javed	Research Supervision	
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