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ORIGINAL ARTICLE

Different Patterns of Ocular Trauma Presentation in Nishtar Hospital Multan

RASHAD QAMAR RAO[1], WAMIQ MEHMOOD[2], AHMAD HASSAN[3], WASEEM SAJJAD[4], NOOR FATIMA[5], WAMIQ MEHMOOD[6]

[1]*Professor & Head of Department Nishtar Hospital Multan*
[2,3]*PGR Ophthalmology Nishtar Hospital Multan*
[4]*Medical officer Nishtar Hospital Multan*
[5]*Final year MBBS Nishtar Hospital Multan*
[6]*Nishtar Hospital Multan*
Corresponding Author: Wamiq Mehmood, Email: Wamiqhassan312@gmail.com, Cell: 03467003338

ABSTRACT

Objective: The objective of this study was to determine the frequency of ocular trauma among gender and different age groups. And to determine various causative factors and the impact of trauma on ocular structures and visual acuity.

Methods: This cross-sectional study was carried out in Ophthalmology department of Nishtar Medical University and Hospital, Multan, Pakistan from May 2021 to August 2021. Data were collected from 142 patients. A questionnaire was devised. Data were analyzed using SPSS V26.

Results: Out of 142 patients that were admitted in Ophthalmology ward, 36 (25.40%) were female patients and 106 (74.60%) were male patients with mean age of 15.9 years with standard deviation of 14.5. There was no statistically significant difference between male and female patients (p value=0.2). Cornea was most commonly injured structure and mechanical factors were the most common cause of ocular trauma. Out of 142 patients, 4 (2.80%) got just medical management and 138 (97.20%) patients required surgical intervention while they were also given topical and oral antibiotics and anti-inflammatory drugs.

Conclusion: Ocular Trauma is most prevalent among children. Males were affected more than females. The cornea was the most commonly affected structure. Ocular Trauma is one of the leading causes of monocular blindness. Most of the ocular traumas were due to some mechanical factors.

Keywords: Ocular Trauma, Multan, Nishtar Hospital, South Punjab

INTRODUCTION

Ocular trauma is one of the leading causes of monocular blindness. Even though the eye only accounts for 0.27% of total body surface area and 4% of the facial area, it is the third most commonly injured organ after the hands and feet [1]. Chemical, mechanical, thermal, and radiation can all produce ocular injuries. According to WHO estimates, the global yearly incidence of ocular trauma is over 55 million 2, and ocular trauma causes blindness in 1.6 million persons globally [1]. Corneal tear, sclera tear, and lens injury are the most common ocular trauma morbidities, followed by the lid and canalicular laceration, uveal prolapse, anterior chamber abnormalities, retinal detachment, and optic nerve avulsion [2]. Sharp object injuries have a better visual outcome than blunt object injuries, and injuries affecting the anterior segment have a better prognosis than injuries involving the posterior segment 3. A substantial percentage of ocular trauma occurs in children under the age of 18. The most common source of injury was household objects, such as knives, forks, pencils, and so on [4]. Road traffic accidents and physical abuse were found to be the major causes of eye damage in the young age group [5].

This study was conducted in Nishtar Medical University, Multan. It's a tertiary care hospital that facilitates the patients of South Punjab as well as patients from adjacent areas of KPK and Baluchistan. It covers an approximate area of 17,935 km2 and a population of 12,265,161. The objective of this study was to determine the frequency of ocular trauma among gender and different age groups. And to determine various causative factors and the impact of trauma on ocular structures and visual acuity.

MATERIAL AND METHODS

This cross-sectional study was carried out in Ophthalmology department of Nishtar Medical University and Hospital, Multan, Pakistan from May 2021 to August 2021. Ethical approval was given by Institutional Review Board. Data were collected from 142 patients that were admitted in Ophthalmology ward with complaint of ocular trauma and required medical treatment or surgical intervention. While those who didn't require any treatment, were excluded from study. A questionnaire was devised that comprised questions about demographic characteristics, type of injury, chief complaints, examination findings, investigations, management and outcome of patients. SPSS V26 was used for data analysis. Means and standard deviation were calculated for different variables. Chi square was used for comparing percentages of different groups and to find p-value. Then tables and graphs were made using Microsoft Excel.

RESULTS

Out of 142 patients that were admitted in Ophthalmology ward, 36 (25.40%) were female patients and 106 (74.60%) were male patients with mean age of 15.9 years with standard deviation of 14.5. Most of the patients (52.82%) were less than 10 years of the age (table 1) with minimum age of 3 months to maximum of 75 years. There was no statistically significant difference between male and female patients (p value=0.2). There were 70 (49.30%) patients

who had trauma to their right eye and similar number of patients had trauma to left eye, while just 2 (1.40%) patients had trauma to both eyes. Most of the patients (25.35%) could perceive light only (table 2). Cornea was most commonly damaged structure figure 1). Mechanical factors were the most common cause of ocular trauma (figure 2). Out of 142 patients, 4 (2.80%) got just medical management and 138 (97.20%) patients required surgical intervention while they were also given topical and oral antibiotics and anti-inflammatory drugs.

Table 1: Age distribution of patients (n = 142)

Age Group (Years)	Frequency	Percentage
<11	75	52.82%
11-20	28	19.71%
21-30	18	12.67%
31-40	12	8.45%
41-50	5	3.52%
51-60	1	0.70%
61-70	2	1.41%
>70	1	0.70%
Total	142	100%

Table 2: Visual Acuity of Traumatic Eyes (n = 142)

Visual Acuity	Frequency	Percentage
6/6	15	10.56%
6/9 – 6/18	4	2.81%
6/24 – 6/48	6	4.22%
6/60 – 3/60	5	3.52%
<3/60	1	0.7%
Counting Fingers	12	8.45%
Hand Movement	4	2.81%
Follow & Fixation	16	11.26%
Projection & Perception of Light	36	25.35%
No Perception of Light	12	8.45%
Couldn't be assessed	31	21.83%
Total	142	100%

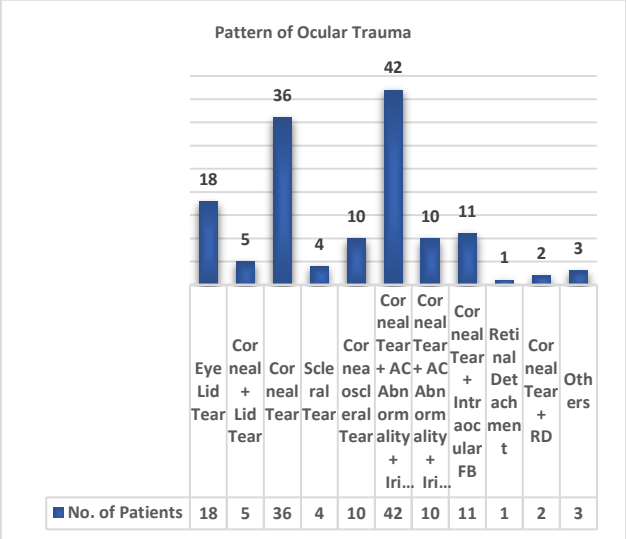

Figure 1: Pattern of ocular trauma

AC = Anterior Chamber
FB = Foreign Body
RD = Retinal Detachment

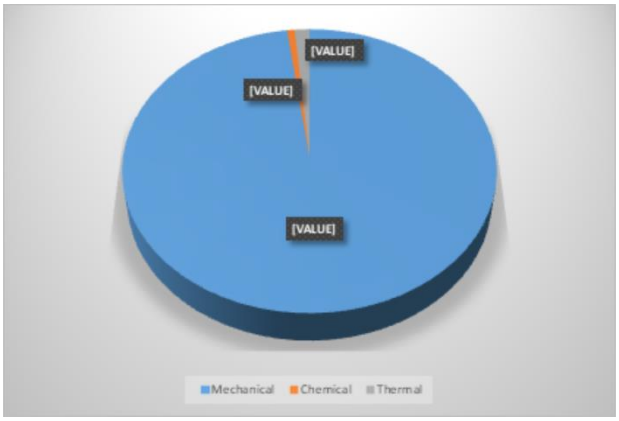

Figure 2: Types of Ocular Injury

DISCUSSION

According to the World Health Organization (WHO) global estimates, the annual incidence of ocular trauma is approximately 55 million and ocular injuries account for 5% to 16% of ophthalmology consultations [6]. Ocular Trauma is one of the major causes of monocular blindness. Our study shows a higher incidence of ocular trauma among males (74.60%) as compared to females (25.4%). A study conducted earlier in Multan; Pakistan also showed a higher incidence among males (69.32%) as compared to females (30.68%) [7]. This is inconsistent with other studies conducted in India (males=72.90%, females=27.10%) [8], Nepal (Males=70.80% and females=29.20%) [9], Malawi (males=73.50% and females=26.50%) [10], and Ethiopia (71.02% were males and 28.98% were females) [11]. Other studies conducted in Pakistan also showed similar results, Gilgit (males =62.61% and females = 37.39%) [12], Lahore (81.60% male and 18.40% females) [13], Gujranwala (84.20% were males and 15.80% were females) 14 and Karachi (64.30% males and 35.70% females) [15]. This predominance in males is because they are more involved in outdoor activities thus prone to ocular trauma. In our study, Ocular trauma was more common in the paediatric age group as 52.82% of patients were less than 10 years old, while 72.53% of patients were below 20 years of age. Other studies also reported higher incidence among children [7,10,11,13,14,15]. This might be due to careless behavior during physical activity and inadequate perception of occurrence. Both eyes were equally involved in trauma (49.30% Right, 49.30% Left and 1.40% Bilateral) in our study. The ocular involvement was almost equal in studies conducted by Alem KD et al 11, Iqbal Y et al [12], and Puodžiuvienė et al [16]. But there was a slight predominance of the right eye in a study conducted by Khaqan HA [13] and high bilateral involvement was reported by Tula Dhar S 9. This depends upon the various mechanisms of injury and the type of activity during which trauma occurred.

Our study reported that the cornea was the single most commonly involved ocular structure. In 25.35% of cases only cornea was involved, in 7.04% cases cornea was involved along with scleral tear, in 29.58% cases cornea was involved along with anterior chamber abnormality and iris prolapse, in further 7.04% cases lens was also involved along with abovementioned structures.

Retinal detachment was seen in 2.10% of cases. Other were remaining structure involved. The cornea was also the most commonly injured structure in a study conducted in Nepal [9]. Corneal damage was 40% in India [8], 39.33% in Ethiopia [11], 8.90% in Gilgit [12], and 46.20% in Gujranwala [10]. In our study, lid tear was seen in 16.19% of cases. It was 15.40% in Gilgit [12]. It was slightly higher in Ethiopia [11] and Gujranwala [14], 24.45% and 33.80% respectively. While it was lower (8.20%) in India [8]. Lens damage including traumatic Cataract was seen in 7.04% of cases in our study. While it was higher in other studies, 18.20%, 19.60%, 22.50% in India, Gilgit, and Gujranwala respectively [8,12,14]. Intraocular Foreign body including corneal foreign body was seen in 7.74% of cases in our study. In Ethiopia, it was 8.41% [11] and higher in Gilgit and Gujranwala, 19.60% and 12.70% respectively [12,14]. Our study reported Retinal detachment in 2.1% of cases. While it was higher in other Pakistani studies (5.60% and 6.30%) [10,12] and lower in foreign studies (1.03% and 1.30%) [8,11]. This discrepancy may be due to different intensities of trauma. The International Classification of Diseases [11] (2018) classifies Distance visual impairment into Mild (visual acuity worse than 6/12 to 6/18), Moderate (visual acuity worse than 6/18 to 6/60), Severe (visual acuity worse than 6/60 to 3/60), and Blindness (visual acuity worse than 3/60) [17]. According to this definition, 45.76% of patients were blind in our study. In Malawi [10] and Ethiopia [11], 40% and 60.70% of patients were blind respectively. While it was just 10.70%, 17.70%, and 11.40% as reported by Iqbal Y et al [12], Tuladhar S et al [9], and Maurya RP et al [8] respectively. This depends upon the extent to which the eye got damaged. In our study, mechanical factors were the most common cause (97.90%) of ocular trauma, while chemical (0.70%) and thermal (1.40%) causes were seen less frequently. This is supported by other studies conducted in Ethiopia (99.70% mechanical and 0.39% chemical) [11], Karachi (95.5% mechanical and 4.5% chemical) [14], Gujranwala (98.90% mechanical and 1.10% chemical) [14], India (95.10% mechanical, 1.20% chemical and 3.75% thermal) 8, Malawi (97% mechanical, 1% chemical and 2% thermal) [10] and Nepal (89.80% mechanical, 2.20% chemical and 8% thermal factors) [9]. This is because mechanical factors are more prevalent in the environment as compared to other factors and thus the cause of ocular trauma. Due to the COVID pandemic, we admitted only those patients who had open globe injury (except a few others), thus surgical intervention was the primary mode of management. Corneal tear Repair was the most commonly performed procedure followed by Iris Repositioning and lens extraction, as was done in Malawi 10 and Ethiopia [11]. While patients with chemical and thermal injuries were managed conservatively.

There are certain limitations to our study. The study was conducted in a single tertiary care setting. We collected data only from admitted patients, while outdoor patients were not included in the study. We had a small sample size. There was no proper follow-up. Postoperative visual acuity was not calculated. Moreover, many missing variables were not analysed. This study is helpful for further studies and for the prevention of ocular trauma. Our study gives an insight into the current status of ocular trauma in Multan. Children were the most vulnerable group in our study. So, there is a need for continuous supervision of children. Dangerous types of equipment should be kept out of reach of children. There should be the use of personal protective equipment in the workplace. There should be public awareness regarding ocular trauma.

CONCLUSION

Ocular Trauma is most prevalent among children. Males were affected more than females. The cornea was the most commonly affected structure. Ocular Trauma is one of the leading causes of monocular blindness. Most of the ocular traumas were due to some mechanical factors. Corneal tear Repair was the most commonly performed surgical procedure. There should be public awareness regarding the use of various preventive measures to avoid ocular trauma.

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