

Pattern of Ocular Trauma in Patients Presenting to a Tertiary Care Hospital

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ABSTRACT

Aim: To determine the pattern of ocular trauma in patients presented to a tertiary care hospital.**Study Design:** A descriptive cross-sectional study.**Duration and Setting of the Study:** Outpatient Department of Munawwar Memorial Hospital Chakwal, Pakistan from 1 September 2020 to 31 December 2020.**Methods:** With informed consent, data including age, gender, occupation, and nature of the object was collected from the patients presenting with a history of ocular trauma. The visual acuity of each patient was recorded using the Snellen Visual Acuity Chart at a distance of 6 meters. Details of the anterior chamber were recorded using Slit lamp biomicroscopy while examination of the posterior chamber was carried out using direct and indirect ophthalmoscope after dilating the pupils with 0.5% tropicamide eye drops. Data was analyzed by using SPSS V-20 (SPSS Inc. Chicago, USA). Descriptive statistics were applied for data analysis.**Results:** Eighty-four patients presented with ocular trauma to the OPD and emergency during study duration. The range of age was 4-70 years. The male to female ratio was almost 3:1. Blunt trauma accounted for 38(45.2%) of cases followed by foreign body 28(33%), organic trauma 11(13%), chemical injury 5(5.9%), and penetrating trauma 2(2.3%) patients. The most common site of ocular injury was the cornea 31(36.9%) followed by eyelid 7(8.3%). More than half of the subjects had trauma from the workplace and 89% were not using protective eyewear.**Conclusion:** Ocular trauma more commonly occur in young male individuals. Blunt trauma was also more common than the other types of ocular trauma.**Keywords:** Blindness, trauma, ocular injury, visual loss.

INTRODUCTION

Eye trauma is a preventable cause of ocular disease. It is one of the most common causes of blindness.¹ Every year, around 1.6 million individuals get blind as a result of ocular trauma.² Around 55 million eye injuries occur, with 750,000 requiring hospitalization throughout the world annually.³ According to Prevent Blindness America, the entire economic impact of visual impairment in America was projected to be \$139 billion (2011), with around 2.4 million yearly US emergency hospital admissions attributable to ocular injuries.⁴ They are a serious public health concern due to their prevalence, severity, and detrimental effect on visual function.⁵ Minor eye injuries can have substantial repercussions, such as amblyopia⁶ and endophthalmitis, and afflicted persons must learn to live with significant financial costs and burdens.⁷ Traumatic injuries have been linked to long-term consequences such as decreased quality of living and loss of productivity in

patients.⁸

There is a lack of data on the epidemiology and visual effects of ocular injuries, particularly in low-income nations.⁹ Ocular trauma is an important public health issue in Pakistan,¹⁰ If not treated promptly, the Pediatric population is more likely to develop amblyopia following trauma.¹¹ Children experience ocular injuries when playing games and sports at home and school.¹² In a study of the Pakistani population, it was concluded that male are 5 times at higher risk of ocular trauma as compared to female.¹³ Young patients (18-35 years) are more vulnerable to ocular trauma in Pakistan, particularly at work place, resulting in a larger economic cost for the country as a whole.¹⁴ Domestic ocular injuries are 24.2%.² The most prevalent causes of eye injuries are metallic foreign bodies and automobile accidents.¹⁵

In underdeveloped nations, data on ocular trauma is lacking in terms of etiology, setting, amount of injury, pattern of harm, and therapy options. Because the nature and features of ocular damage vary based on employment and socio-demographic variables. We wish to know the incidence and characteristics of ocular trauma in Chakwal. To devise methods for the prevention and management of this debilitating illness,

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it is necessary to have a thorough understanding of the etiology of trauma, the patterns and features of trauma, and the at-risk population. Appropriate resource allocation for the prevention and treatment of ocular injuries can be planned based on the region's ocular injury burden.

METHODS

This descriptive study was conducted in the Outpatient Department of Munawwar Memorial Hospital Chakwal over a period of 4 months from 1 September 2020 to 31 December 2020. Patients presenting with a history of ocular trauma. A detailed history was recorded including age, gender, occupation, and nature of the object. The visual acuity of each patient was recorded using the Snellen Visual Acuity Chart at a distance of 6 meters. Details of the anterior chamber were recorded using Slit lamp biomicroscopy. Any abnormality found in anterior chamber was recorded. Examination of the posterior chamber was carried out after dilating the pupils with 0.5% tropicamide eye drops using direct and indirect ophthalmoscope. Patients having trauma older than 1 year, below four year of age, non-cooperative and mentally disabled individuals were excluded from the study. With informed consent, data was collected from each patient. Data was entered, summarized, and analyzed by using SPSS V-20(SPSS Inc. Chicago, USA). Descriptive statistics were applied for data analysis.

RESULTS

In this study, we evaluated 84 patients who presented with ocular trauma to the OPD and emergency department during four months of the study duration. In our study, the range of age was 4-70 years and the male to female ratio was almost 3:1, including 65(77.38%) male.

Most of the participants with ocular trauma were younger than 30 years of age, which occurred in 50 (42%) patients. While in 31-60 years of age, the ocular trauma occurred only in 30 (25.20%) patients. In our study, the ocular trauma less commonly occurred above 60 years of age, which involved only four patients that

was about 3.36%. In our study, pattern of ocular trauma is given in table 1. The cornea was the most common ocular structure, which was affected in the trauma that was about 31(36.9%) while retina was less commonly affected in the ocular trauma.

Types of ocular injuries are given in table 2. In which Blunt trauma and foreign bodies in eyes were more frequently observed and shared a percentage of 78% in total. In our study, 89.5% of the patients were not using any protective measures at the workplace. While only 10.5% were using glasses and helmet eye protection.

Table 1: Pattern of ocular trauma

Ocular Structure	Frequency	Percentage
Orbit	6	7.1
Lid	7	8.3
Conjunctiva	26	30.9
Cornea	31	36.9
AC	3	3.6
Lens	9	10.7
Retina	2	2.3

AC= anterior chamber, %= percentage

Table 2: Type of ocular injury

Type Of Injury	Frequency	Percentage
Blunt trauma	38	45.2
Organic trauma	11	13
Chemical Injury	5	5.9
Foreign body	28	33
Penetrating trauma	2	2.3

DISCUSSION

The current study sought to determine the prevalence of ocular trauma at MMH Chakwal. This study's findings emphasize numerous key features relating to age, gender, trauma kinds, and ocular structures damaged by trauma. The discussion that follows focuses on the important results and their implications.

According to our findings, age had a major association with ocular trauma. A majority of ocular trauma patients are shown to be below 30. The finding is in line with earlier research.¹⁴ Ocular trauma is more common in this age range due to employment dangers, greater

behavior among young people. Understanding the age distribution of ocular trauma is critical for developing targeted preventative strategies and educational programs.

Regarding gender, our study revealed a higher incidence of ocular trauma of about 77% in male compared to female. This conclusion is consistent with prior research that has consistently indicated a male majority in ocular trauma patients.^{14, 16} The increased occurrence among male may be due to greater participation in activities associated with a higher risk of trauma, such as physical labor, sports, and irresponsible behavior. Educating men about eye safety and encouraging preventative measures may help to lower the prevalence of ocular injuries in this demographic.

The types of trauma observed in our study varied in nature and severity. In the context of types of ocular injury, blunt trauma accounted for a maximum number of cases 38(45.2%) followed by a foreign body (33%), organic trauma (13%), chemical injury (5.9%), and penetrating trauma (2.3%). Our findings corroborate previous studies that have reported similar patterns of trauma types.¹⁷ Understanding the distribution of trauma types is crucial for implementing preventive strategies and providing appropriate management protocols.

The most common site of ocular injury was the cornea (36.9%). Previous literature reported similar results earlier.^{2,16,18} Involvement of other structures included eyelid (8.3%), lens (10.7%), lid (8.3%), orbit (7.1%), AC (3.6%), and retina (2.3%). These findings correspond with the anterior segment's identified sensitivity to severe damage due to its exposed position and sensitive nature. Proper eye protection and particular ocular structural awareness programs can help to reduce the prevalence and severity of trauma-related problems.

There were 47 (56%) of 84 subjects who suffered ocular injuries that were found to be related to work-related injuries. Prior studies have reported that 50.7% of cases were work-related.¹⁹ Five out of 47 subjects were

reported for protective eyewear use. Other studies also indicate the low usage of ocular protective equipment among workers.²⁰

It is crucial to mention that our research has several limitations. The data was gathered from a single-eye hospital, which may restrict the findings' applicability to other contexts. Furthermore, the study's observational design may have added selection bias and hampered the capacity to thoroughly investigate possible risk variables. Prospective research with bigger sample sizes and different demographics is suggested in the future to confirm and expand on our findings.

Finally, our research sheds light on the occurrence of ocular trauma in an eye hospital. The findings emphasize the significance of age, gender, trauma type, and impacted ocular structures in understanding and treating the burden of ocular trauma. To avoid ocular injuries, targeted interventions such as educational programs, eye protection promotion, and occupational safety measures should be adopted.

Ocular trauma was more prevalent in young adults, especially males affecting visual and daily life activities. Poor compliance regarding the use of safety measures was observed and it contributed significant role in a high prevalence of ocular trauma. The use of protective eyewear and other safety measures can reduce the incidence of trauma. Furthermore, community awareness sessions should be conducted to sensitize the general public. Studies with large sample sizes and longer duration will give more promising and accurate results.

Conclusions

Ocular trauma more commonly occurred in young male individuals. Moreover, the blunt trauma was also more common than the other type of ocular trauma.

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