

Profile of ocular injuries and its medicolegal aspects in Jhalawar region

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Abstract

Background: Ocular trauma was once described as “Neglected Disorder”, but now it is known as a major cause of visual morbidity leading to visual loss or impairment and diminished quality of life.

Aims and Objectives:

1. To Estimate Incidence & Pattern of Ocular Injuries of Medico-legal importance in patient attending to Medical College Jhalawar & Associated Group of Hospitals from 1st January 2019 to 31st December 2019.
2. To know about the Factors Influencing Ocular Injuries.
3. To know about the Medico legal type of Ocular Injuries.

Methodology: This prospective hospital based study was carried out in Department of Forensic Medicine & Toxicology, Medical College Jhalawar, after ethical clearance 124 subjects were studied fulfil in inclusion and exclusion criteria. A detailed history and clinical examination was performed and investigations were also done if required. Data were extracted and appropriate statistics were applied.

Results: Young Males were more affected by Ocular Injuries. No significant difference were found in laterality of eye injured. Blunt injury was observed as most common type of Ocular Injury.

Conclusion: The medico legal consultant must take detailed history, proper documentation and should be familiar with ocular examination for better management of medico legal cases of ocular trauma.

Keywords: Ocular injuries, medicolegal aspects, Jhalawar

Introduction

An injury is any harm whatever illegally caused to any person, in body, mind, reputation or property (S.44, I.P.C.). Trauma is an injury or wound to a living body caused by application

of external force or violence ^[1]. Injuries of sense organs have specific significance such as ocular injuries. When it occurs due to trauma by violence or accident to the body, hampering the loss of eyeball and visual acuity, then it (ocular trauma) has forensic significance, According to sec. 320, I.P.C ^[2]. Application of knowledge of ophthalmology to clarify or solve legal problems or issues constitutes Forensic ophthalmology and Medico legal ophthalmic examination of living or dead is a major component of it ^[3].

The eye being the bilateral organs of visual system, its involvement by injury has medico-legal implications, both of civil and criminal nature, so every doctor must be familiar with the procedure of examination and recording of data for medico-legal purpose. Ocular trauma once described as the neglected disorder ^[4] has recently been highlighted as a major cause of visual morbidity and considered an important public hazard with enormous economic and social consequences ^[5]. WHO program for the prevention of blindness, suggests that around 55 million eye injuries, restricting activities for more than one day, occur each year. 750,000 cases require hospitalization each year ^[5].

Incidence for hospitalized ocular injuries varies among different countries, for instance 6.8 per 1000 in United States ^[6], 0.53% for India ^[7] and 12.9% in Pakistan ^[8]. This variation in incidence of ocular injuries from country to country depends on degree of industrialization of area and whether the incidence of superficial foreign bodies and minor injuries is included in the estimate or not. It also depends on location of the hospital in relation to industrial areas.

Available information regarding the incidence and magnitude of ocular trauma in developing countries is very scarce. Existing data are difficult to interpret because reporting is extremely poor and because of completely different setting of the occurrence of ocular trauma ^[9, 10]. Lack of unambiguous common language is a major limiting factor in effective sharing of eye injury information. Kuhn *F et al.* (1996) ^[11] has introduced the Birmingham Eye Trauma Terminology (BETT). This comprehensive, standardized system of eye trauma terms should be utilized to make data internationally acceptable. In addition, developing countries often lack adequate infrastructure for persons with eye injuries to reach a primary health centre and when one exists, the lack of awareness of preventive measure and/or immediate action increases the risk for complications and consequent visual disability and blindness ^[8, 9]. Thus we conducted this study to determine about the medico-legal type of ocular injuries, their distribution and factors influencing ocular injuries in patients attending forensic department OPD of a tertiary health care centre in a developing country.

Aims and Objectives

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Material & Method

This prospective hospital based study was carried out in Department of Forensic Medicine & Toxicology, Medical College Jhalawar. Prospective Study was conducted over period of one year from 1st January 2019 to 31st December 2019 in which all patients of ocular injuries brought to this department of SRG hospital were included after receiving ethical clearance from the institutional ethical committee. Before eye examination consent was acquired from all patients.

Inclusion criteria

- All Patients of Ocular Injury brought to Forensic Department of Medical College, Jhalawar.
- Patients having Ocular Injury within 24 hours.
- Patients having no complain of Visual Defect before Injury.

Exclusion criteria

- Patients having Old Ocular Injury & History of Operation.
- Patients having Chronic Systemic Disease more than 10 years e.g. Diabetes mellitus, Hypertension.
- Patient having Bleeding Disorders & Head Injuries.

In this study detailed history including demographic data, mode of injury, nature of injury, about primary management, time gap between injury and presentation to the hospital was recorded.

After enrolment a thorough clinical examination was carried out with torch light & visual acuity was recorded using Snellens chart.

X-Ray was done to rule out intra ocular foreign body and orbital fracture. USG (Ultrasonography-B scan) was carried out to assess posterior segment status particularly retinal detachment, vitreous haemorrhage and to rule out retained intraocular foreign body in patient with hazy media. Other relevant investigations like CT scan were done whenever indicated.

All records were analysed and relevant data's were extracted and entered into a database for statistical analysis.

Observations and Results

This is a prospective hospital based study undertaken over a period from 1st January 2019 to 31 December 2019. During this period total 14,300 ocular patients of various ocular ailment and ocular injuries were visited in Jhalawar Medical College for seeking treatment and medico-legal purpose. 150 patients were of eye injury cases, out of which 124 cases were selected for our study purpose as per inclusion criteria. The study has been done after receiving an ethical clearance certificate from the institutional ethical committee and proper consent from patient.

We found that 71.00% male patients and 29% patients were female had ocular injury. 56.30% injuries were occurred in first 3 decades. Mean age of presentation was 30.99 years; male are more victim of ocular trauma than female in all age group and incidence of injury was declining with advancing age after initial rising up to third decade. Right eye involvement was slightly higher side in comparing with Left side involvement in this study group and very low incidence of bilateral involvement. 50.80% patients were resident of rural area belonged to village and 49.20% patients were resident of urban area. Almost very low difference in incidence of ocular injuries in rural and urban population.

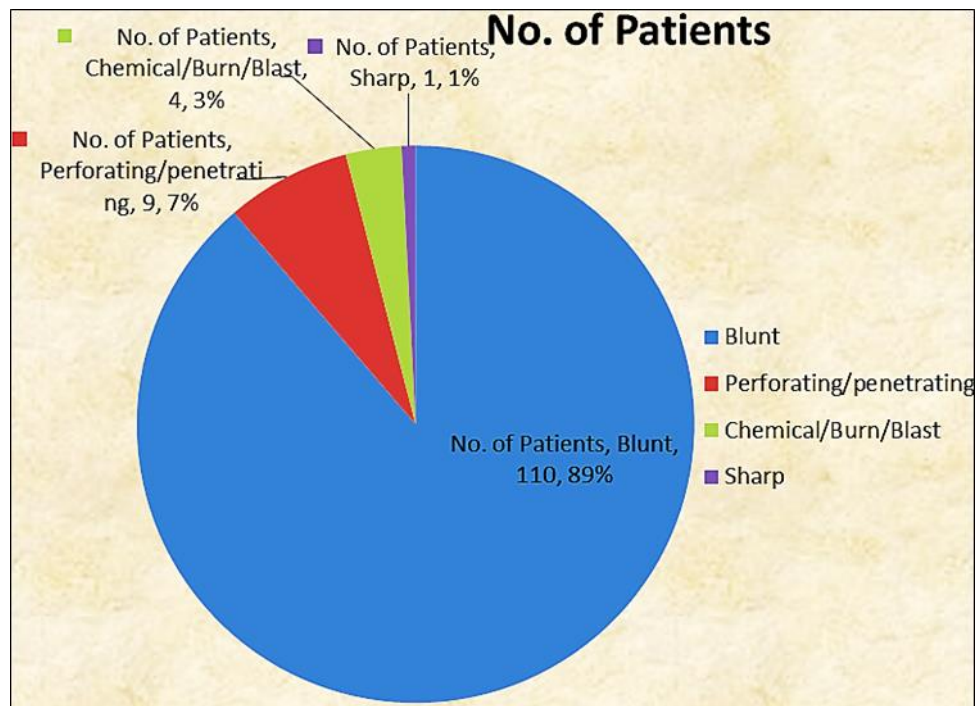
When we observe table 2, there were 96.77% case of mechanical injury (blunt, sharp and perforating/penetrating) and rest 3.22% were of chemical/thermal burn/blast cases. Blunt injury (88.70%) cases were maximum type of injury from all type of mechanical injuries cases (96.77%).

Table 1: Socio-demographic distribution of studied subjects

| | No. of Patients | Percentage |
|-------------------|-----------------|------------|
| Age | | |
| 0-30 | 70 | 56.45% |
| 31-60 | 46 | 37.58% |
| >60 | 8 | 6.45% |
| Gender | | |
| Male | 88 | 71% |
| Female | 36 | 29% |
| Residence | | |
| Rural | 63 | 50.80% |
| Urban | 61 | 49.20% |
| Laterality | | |
| Right eye | 64 | 51.61% |
| Left eye | 55 | 44.35% |
| Both eye | 5 | 4.04% |

Table 2: Distribution of patients according to Type of Injury

| Type of Injury | No. of Patients | Percentage |
|-------------------------|-----------------|------------|
| Blunt | 110 | 88.70% |
| Perforating/penetrating | 9 | 7.25% |
| Chemical/Burn/Blast | 4 | 3.22% |
| Sharp | 1 | 0.80% |



Discussion

The study provides insight on the clinical and demographical profile of ocular trauma in hospital attending patients. Hospital based studies indicate only tip of iceberg of disease/injuries which manifest clinically and provide low rates and data but it well represents the pattern and profile of injuries ^[12]. During this study period there were total 14,300 patients visited hospital for various ocular ailments, out of which 150 cases were of ocular trauma patients for management of ocular trauma, out of which 124 patient were included in this

study as per inclusion criteria.

In this study we observed that cases of ocular trauma were 1.04% (150) of total ocular cases 14,300 attending in our hospital during study year. This finding is consistent with G.S. Titiyal *et al.* (2013) ^[13] that 165 (1.03%) cases of ocular trauma patient were registered out of total 15,970 ocular cases attending in the presenting year.

Sex

Out of these 124 patients 88 patients were male and 36 patients were female. Male patients were 71% while female were 29%. In almost all the studies the incidence of injuries in male was much higher than female. Possible explanation for this is a great mobility, activity, risk taking behavior they have, and of male's aggressiveness.

In the present study male female ratio was 2.44:1. It is similar to as reported by SRK Malik *et al.*, (1968) ^[14] sex ratio (3:1) but lower than 5.4:1 as reported by Parul Desai *et al.* (1996) ^[15] and higher than 2:1 as observed by Nirmalan *et al.*, (2004) ^[5] Gerald McGwim *et al.*, (2005) ^[6] reported that male has consistently higher incidence rate in all age groups but in older age group sex ratio become less distinct.

Age

This study reports age range of total ocular injuries from 3yrs to 75yrs, 70 (56.45%) injuries occurred in first 3 decades From this study we noted that the males are more victim of trauma than female in all age groups and it is also observed that incidence of injury decreases with advancing age (from age of 41yrs to 80yrs) after initial increase upto third decade. This was consistent with study of RJ Glynn *et al.*, (1988) ^[16] they also observed the same as a steep linear decline in eye injury rates with advancing age. Mean age of presentation was 30.99 yrs. Our findings were similar to some of the prior studies ^[16-19].

From above study it is revealed that most commonly involved age group comprises the economical productive age group and ocular injuries in this age group results in great economical loss. Increase incidence of ocular injuries among Youngers can be explained by their frequent social activities.

Rural and urban

In the present study attempts were made to categorize residence on the basis of mailing address into urban and rural. It was found that slightly more cases from village (50.80%) but due to situation of hospital in centre of city the urban patient were also nearly equal (49.20%). Study by P R Sthapit *et al.*, (2011) ^[20] also reported that injuries were more common in rural population (60.7%) as compared to urban population (39.3%) but Scillino *et al.*, (2008) ^[21] reported no statistical significant differences in rates of ocular injuries in urban (4.2/100,000; 95% CI, 4.1-4.3) and rural population (5.5/100,000; 95% CI, 5.4-5.65).

Laterality

There was insignificant tendency towards right or left eye in the study, both being affected approximately similar in percentage, but in this study right eye involvement was slightly higher side in comparing with left eye (Rt. eye 51.61%, Lt. Eye 44.35% and both eye 4.04% eye) involved.

Claudia Florida Costea *et al.* 2015 ^[22] reported 53.22% right eyeball and 46.78% left eyeball involvement. Tsedeke Asaminew *et al.*, (2009) ^[5] also reported right and left eyes were affected equally, 49.7% right and 50.0% left. SK Khatri *et al.*, (2004) ^[19] reported right eye

involvement in 45.5% cases, left eye involved in 53.3% and both eye involved in 1.1% cases.

Type of Injury

We also observed that 96.77% cases of mechanical injury (blunt, sharp and perforating/penetrating) and rest 3.22% were of chemical/thermal burn/blast cases. Blunt injury (88.70%) cases were maximum type of injury cases from all type of mechanical injuries cases (96.77%). Our findings were more consistent with findings of IM Shukla *et al.*, (1979) ^[23]. In their study the incidence of mechanical injury was 94.25% as compared to chemical & thermal injuries which constituted only 4.5% of total ocular injuries and in study of S.R.K Malik *et al.*, (1968) ^[14] the incidence of mechanical injuries were 92% as compared to chemical and thermal injuries which constituted only 8% total cases of total ocular injuries. After 6 weeks 96 Patient were found to have simple injuries while 28 patients recorded as grievous hurt. Accidental injuries were found to be 91.63% and homicidal injuries were 8.4% with no suicidal injury observed. No fatality was found in the study following ocular injury. Almost all patients (77.41%) in our study setting were cured and discharged with a minimal duration of hospital stay. There was no case of medical negligence and also, no patient was detected to foreign ocular trauma to register themselves as medico legal cases.

Conclusion

Proper history taking and documentation is vital as it assists in diagnosis and management of the patient but also holds an evidentiary value in medico-legal cases. Basic knowledge of ophthalmology and available medical literatures are important dimensions in offering a medico-legal opinion. It is therefore important for every doctor to be familiar with procedures of ocular examinations and ophthalmologist's opinion should be sought whenever required, as well as good record keeping to ensure that there is no medico-legal liability on his/her part. Certain ocular injuries involving the cranium may prove fatal immediately and few delayed complications like meningitis, endophthalmitis, panophthalmitis and sympathetic ophthalmitis have been reported to cause death of injured. Thus by using medical knowledge especially in case of homicide, opinion about possibility of death under ordinary cause of nature, bears importance, when ocular injuries extend deeper. Here, it may be important to note that we should give opinion after complete healing which may take 6 weeks or 6 months or more on an average, then only we can judge whether the disability or disfigurement is permanent or not because anatomical healing usually never correlate with physiological healing.

Depending on the severity of ocular trauma, in forensic cases the patient assessment must be detailed and well documented in order to determine visual acuity, ocular motility and pupillary reflexes. Also direct ophthalmoscopy, fluorescein 2% seidel-test, orbital X-ray, ocular ultrasound B-mode, computed tomography, and magnetic resonance image should be taken into consideration if needed.

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