



The Characteristic of Ocular Trauma in Adulthood Patients at Adam Malik Hospital Period 2011-2012: A Hospital Based Study

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Abstract:

Purpose: To determine the characteristics of patients with ocular trauma in hospital H.Adam Malik.

Methods : All cases of ocular trauma admitted to Department of Ophthalmology Faculty of Medicine North Sumatera University, from January 2011-December 2012 were retrospectively reviewed for open or closed globe injury (OGI or CGI). Data extracted included age, sex, residence, the type, cause of injury, visual acuity, The injuries were classified by American Academy of Ophthalmology. We also referred to the Birmingham Eye Trauma Terminology (BETT) and Ocular Trauma Classification System(OCTS).

Results: 141 eyes of incident ocular trauma were reported, with a mean age of 26-33 years (24.8%). Most injuries occurred in men (76.6%) vs (23.4%) for women. The most common types of injury were blunt and perforating, with *Grenda* was common cause of injury. 44.7% patients had a visual acuity >6/18, 24.1% 6/18-6/60 and 2.8% light perception. Ocular trauma mostly happened on right eye (51.1%) and most complication happened in cornea (41.8%).

Conclusion: This analysis provides insight into the characteristic of patients adulthood for ocular trauma. The finding indicate that ocular trauma is a significant cause of visual loss in this population.

Keywords: ocular trauma, open globe injury, closed globe injury, blunt trauma, perforating trauma.

Introduction

Ocular trauma is a major cause of monocular visual impairment and blindness worldwide. Based on the National Programme for Control of Blindness (NPCB), 1992, blindness due to trauma ranks - 6 after cataracts, retinal disorders, corneal disorders, glaucoma, optic atrophy and trauma. While blindness due to trauma by NPCB covers approximately 1.9%. In a study conducted in the USA from 1999 to 2001 by the NCHS (Nationale Center for Health Statistics) found approximately 2 million eye trauma where 4 thousand impaired visual acuity that persisted. The majority of the patients were between 19-39 years of age (productive age). most injuries are accidental and occur in the workplace, particularly in a industrial setting.^{1,2,3,4}

Another large of retrospective study performed in the United Kingdom also showed that the majority of victims in the ical related ocular injuries were young males. *Morgan* demonstrated that in study of 180 patients from 1985-1986, 136 patients (75.6%), were male and only 44(24.4%) were female. In this series, the majority of the cases occurred in the workplace (63%), 33% occurred at home, and 3% occurred at school. Alkali injuries were twice as common as acid injuries.⁵

In Nepal, "corneal trauma and ulceration" is the second most common cause of blindness after cataract. The prevalence of blindness due to eye trauma and trauma nationally yet known with certainty.

However, in the sense of Sight and Hearing Survey in 1993-1996, eye trauma included in the group of other causes of blindness - and the other in the prevalence get about 0.15% of the total blindness in the range of 1.5% nationally.^{4,5,6,7}

Lack of complete data and information about eye trauma in the province of North Sumatra especially in the referral hospital H.Adam Malik is the background of researchers to investigate the characteristic of ocular trauma in hospital H.Adam Malik.

Methods

This study is a retrospective descriptive, data were obtained from the medical record of adulthood patients with ocular trauma in Trauma and Reconstruction division in Department of Ophthalmology at Adam Malik Hospital in 2011- 2012.

Ocular trauma were classified by American Academy of Ophthalmology.

1.Closed globe injury: -Contussive trauma - *Nonperforating mechanical trauma* 2. Open globe injury : - *Perforating mechanical trauma* 3.Chemical trauma 4.Thermal trauma 5. .Electric trauma 7. Animal & plant substance. We also referred to the Birmingham Eye Trauma Terminology(BETT) and Ocular Trauma Classification System(OCTS).^{2,8}

Sample size is determine by the method of sampling consecutive ie all subject that come aged > 18 years old during the period 2011-2012. Inclusion criteria were all ocular trauma patients aged > 18 years old to included age, sex,residence, the type, cause of injury, visual acuity and complication of ocular trauma. Exclusion criteria that medical record are incomplete.

Dependent variable is eye trauma patients. Independent variable are visual acuity, type of trauma, cause of trauma, complication and socio-demographic.

Result

There were 141 cases ocular trauma from 2011-2012, The most frequent type of ocular trauma was *nonperforating mechanical trauma* (38.3%), contussive (27%), followed by *perforating mechanical trauma* (21.3%). The most common specific cause of ocular trauma was *foreign body Grenda* (40.4%), traffic accident (15.6%), fight or assault (11.3%). The majority of all injuries occurred in men (76.6%) than women(23.4%).

There was a significant difference in final acuity between open and closed globe injuries. Visual acuity of >6/18 for closed globe injuries meanwhile open globe injuries was 5/60-3/60. Ocular trauma mostly happened on right eye(51.1%) left eye (26.1%).

Table 1. Distribution of ocular trauma by age

Age Group	f(%)
18-25 y	29 (20.6)
26-33 y	35 (24.8)
24-41 y	31 (22.0)
42-49 y	22 (15.6)
50-57 y	13 (9.2)
>58 y	11 (7.8)
Total	141 (100)

Table 2. Distribution of ocular trauma by gender

Gender	f(%)
Male	108(76.6)
Women	33(23.4)
Total	141(100)

Table 3. Distribution of ocular trauma by visual acuity

Visual acuity	f(%)
>6/18	63(44.7)
6/18-6/60	34(24.1)
5/60-3/60	27(19.1)
Light perception	4(2.8)
No light perception	13(9.2)
Total	141(100)

Table 4. Distribution complication of ocular trauma

Complication	f(%)
Palpebra	17 (12.1)
Conjunctiva	35(24.8)
Cornea	59(41.8)
Perforated on cornea /sclera	10(7.1)
Camera oculi anterior	2(1.4)
Iridodialisa	2(1.4)
Segmen posterior	9(6.3)
Other	7(4.9)
Total	141(100)

Table 5. Distribution of ocular trauma by cause trauma

Cause trauma	F (%)
<i>Grenda</i>	57 (40.4)
Accident traffic	22 (15.6)
Smash	16 (11.3)
Plants	10 (7.1)
Wood	7 (10.1)
Rock	7 (10.1)
Toxic	4 (2.8)
Caustic soda	2 (1.4)
Other	16 (11.3)
Total	141(100)

Table 6. Distribution of ocular trauma by type of trauma

Type of trauma	f(%)
Closed globe injury	
- Contussive trauma	38 (27)
- Nonperforating mechanical trauma	54(38.3)
Open globe injury	
- Perforating mechanical trauma	30(21.3)
Thermal trauma	2(1.4)
Chemical trauma	7 (5.0)
Animal& plant substance trauma	10(7.1)
Total	141(100)

Discussion

The highest proportion of ocular trauma in adulthood in the age group 26-33 years (24,8%) and the lowest in the group >58 years (2.8%). Similar with reseach by USEIR ((United State Of Eye Injury Registry) where the average age of 33 years 57% and research by HEIR (Hungarian Eye Injury Registry) 29 years 42 %.in Nepal the average ocular trauma 28 years. A male preponderance thought to be related to occupational exposure, participation in dangerous sports and hobbies,alcohol use and risk taking behaviour.⁸⁻¹²

The research by Salvatore etc in Department of Ophthalmology of Palermo University the visual acuity was 6/12 or better in 144 eyes(48.3%), 20/40-20/200 in 90eyes (30.2%) and <6/60 or less in 15.5%. Eighteen eyes 6% had a final visula acuity of no light perception. In Sanglah hospital , Bali, visual acuity> 6/18 64.4% and 12.2 % < 3/60. These was correlated with our study.^{7,13}

Type of trauma is closely related with the type of complications occurred. Open globe trauma causes more complications compred with closed trauma. *Katz and McCarty* found that the chemical and physical trauma more causes complication to cornea and conjunctiva. These was corelated with our study that complications in cornea 41.8%. As well as *Koval* found 44.4% complications in cornea.^{14,15,16}

Yu also reported that most ocular trauma in Hongkong occur in workplace due to low level of safety and lack of discipline of workers in use protective eyewear.¹⁴

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