ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 49. 23
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 3, Issue – 6, November - 2018, Page No. : 17 - 22

Retrospective Study of Severe Occular Trauma;Presentation And Final Visual Outcome.

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Ocular trauma constitutes an important cause of preventable visual morbidity worldwide. It is one of the main causes of severe ocular morbidity [1–8]. Globally, more than 55 million eye injuries occur per year, while there are approximately 1.6 million people with blindness from ocular trauma, 2.3 million people who are bilaterally visually impaired, and 19 million people with unilateral blindness or visual loss

Kashmir is a disturbed state; incidences of violence have markedly increased in recent years which have resulted in increase in severe ocular trauma. This study was done to know the characteristics, presentation and final visual out of patients admitted with severe ocular trauma

Decrease or loss of vision, either monocular or binocular, may result in significant economic burdens to families and countries due to time lost from work, or school, and family care giving, expensive hospitalization, special visit and treatment, prolonged follow-up, and visual rehabilitation. Because of the severity of visual impairment of ocular trauma, complete ocular trauma statistics and authoritative data should be collected visual outcomes of ocular trauma.

Keywords: Severe Trauma, Disturbed State.

Materials and Methods

Patients with ocular trauma admitted to SKIMS Medical college Hospital (SKIMS MCH) from March 2017 to March 2018 were reviewed retrospectively.

Age, gender, the affected eye, causes and types of ocular trauma, time interval from injury to presentation, duration of hospitalization, and follow-up were recorded. Initial visual acuity (VA), management, and final VA were further documented. Ages were divided into eight groups as 0–10, 10–20, 21–30, 31–40, up to 80 years(fig -1). Ocular trauma was classified by the standardized international classification of ocular trauma, Birmingham Eye Trauma Terminology system (BETTS) [14–16]. Types of ocular trauma were divided into six types as work-related, home-related, school-related, sports-related, traffic-related, and violence-related. Time interval from injury to presentation was divided into four groups as 0–24 hours, 24–48 hours, 2–4 days, and ≥4 days. Initial and final VAs were both classified under no light perception (NLP), light perception (LP)/hand motion (HM), count fingers(CF),6\60to 6\24,6\18 or better. Type of injury and mode of injury was also recorded(.fig4-5)

Statistical analysis was performed using SPSS version 16.0 statistical software (IBM, Armonk, NY, USA. Pearson's chi-squared test and Student's *t*-test were used

to evaluate differences in parametric variables. A value less than 0.05 is considered statistically significant.

Results

This study included 92 patients who were admitted for severe ocular trauma in the year March 2017 to March 2018.Ocular trauma treated on outpatient basis were excluded .

Males had a higher rate than females (91% versus 9%)(fig -2).The largest age group was 11 to 20 years followed by 21to30 years. The maximum number of patients (67%) was between 11 and 30 years depicting the age group most vulnerable to trauma in disturbed states. Thirty seven patients had injury in right eye and fifty five (48.1%) patients had injuries in their left eyes. Of the patients, 80.5% presented within 24 hours after eye injuries. A further 5.9% presented between one and four days from the occurrence of the injury. Only 13.6% presented more than 4 days after sustaining the eye injuries. Average duration of hospitalization was days (3 -20days). Duration of follow-up was months (6 months). Closed globe injury was the most common presenting with full chamber hyphema and vitreous hemorrhage with 32.1%. Open globe injury, accounting for 30%, was the second common eye injury, which included 34 cases of rupture, 19 case of penetrating injury, 3 cases of intraocular foreign body, and 3 cases of perforating injury ,Ten eyes had adnexa injuries

41% patients had pellet injuries and injuries due to stone pelting; other causes include blunt trauma, road traffic accidents and animal bites. Injuries caused by falling were seen most commonly for the elderly. Causes of injuries differed significantly in different age groups.

In terms of management, 43 eyes were medically treated, and the rest eyes required surgical intervention. Ocular wall repair, lensectomy, or phacoemulsification, were the most common surgical procedures. Posterior vitrectomy was required for 12 eyes with posterior foreign bodies, vitreous hemorrhages, retinal detachments, and endophthalmitis. Anterior chamber washout was needed for 5 eyes due to severe hyphema and anterior chamber foreign bodies.

Only twenty two (24%) eyes had initial VA of 6\18 or better, 10% of patients had hand movements while 3% presented with PL- vision. After about 6 months of follow-up, the final VA was 6\18 or better in 26.1%, 6\24to 6\60 in (19.9%) eyes. Ten eyes (21.7%) had final VA of LP/HM and 4 (4.7%) eyes had final VA of NLP. There was a significant correlation between initial VA and final VA (Spearman's test).

Discussion

In our study, males had a higher rate than females, especially those less than 35 years of age. Other studies also reported a higher rate in males [17–21] . This might be due to different occupational exposure between different genders and boys more involved in violent agitations. Mean age was years (5–80 years). Most of the eye injuries were found in teen-aged and young groups (10–30 years) which is coincident with other studies [2, 22]. This may be explained by the fact that the working population is of high risk and accounts for the largest portion of ocular trauma.

After injuries, over four-fifths of patients (80.5%) presented on the same day as sustaining their injuries, and less than one-seventh of patients (13.6%) still had a delay of 4 days before clinical review. Cao et al. [4] thought that delayed presentation was a matter of concern about final VAs. This suggests that the public's awareness of seeking medical care in timely manners should be improved.

In our study, average duration of hospitalization was days that was longer than most studies which had a mean of 6.4 days [4]. This could be related to the severity of injuries or social reasons. Firstly, due to local health care system in

our region, only relatively serious eye injuries require hospitalization, which needed multiple operations within longer hospital admission. At the same time, young patients involved in stone pelting accounted for the majority of the injured patients, and they preferred to stay in hospital before obtaining stable vision which resulted in the extension of hospital admission.

With regard to surgical procedures, of the 92 injured eyes, 56.4% had ocular wall repairs, 33.9% had lensectomy or phacoemulsification, and 8.9% had anterior chamber washouts, which suggest that injury is preferred in the anterior segment of the globes than the posterior segment, highlighting the significance of the anterior segment. This not only suggests that wearing eye-protection devices should be introduced, because such anterior segment injuries would have been easily blocked by eye-protection devices [26], but also suggests that the training modules for the emergency and junior ophthalmologists should emphasize the anterior segment of the eye globe, types of ocular trauma, appropriate precautions, and first-aid management of the injured eyes.

In the current study, only twenty two (24%) eyes had initial VA of 6\18 or better, 10% of patients had hand movements while 3% presented with PL- vision. After about 6 months of follow-up, the final VA was 6\18 or better in 26.1%, 6\24to 6\60 in (19.9%) eyes. There was a significant correlation between initial VA and final VA .Initial grave visual acuity was associated with less favorable final visual acuity. Those eyes with final VA of NLP all occurred in cases with initial VA of LP/HM or worse. Meng and Yan have also demonstrated that initial VA was found to correlate significantly with final VA in eye injuries. Our study showed the same result that initial VA correlated with final VA (Spearman's test), which was consistent with that of Man and Steel and Weichel et al. [16]

There were several limitations in our study. First, the number of injured eyes might be underestimated. This may be because of some closed globe injuries, which might be treated as outpatients. Second, comprehensive information about medical records could not be acquired, such as the extent of injury, zone involvement intraoperatively, and the time to first surgery in cases of open globe injuries, so we were unable to reorganize the correction between the above factors and final VA. This suggests that, a standardized reporting system, United States Eye Injury Registry (USEIR) surveillance, as exists in other countries is recommended and would help to evaluate changes in the epidemiology of eye injuries over time and provide population-based longitudinal data for preventive strategies. However, with these limitations, our data still provided useful information concerning the clinical characteristics of ocular trauma.

In conclusion, susceptible population of eye injuries were young-aged groups, and the proportion of males was higher. The leading two types of ocular trauma were violence-related and work-related. Initial VA was a significant predictor of the final VA in ocular trauma. It is therefore recommended that efforts should be invested in education for eye protection in order to prevent ocular trauma in the young- and middle-aged groups.

Conclusion

It is worrisome that none of the admitted patients used protective devices at the time of injury. Prevention of eye injuries requires education of children and their care givers on potential dangers of stone pelting, at the same time use of pellet guns by the security personnel should also be banned.

Conflicts of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

Fig. No.1: Age of patients ranged from 6 to 75 years with a mean age of 23.58 ± 13.83 years.

Age (years)	No. of patients	Percentage
1-10	12	13
11-20	35	38
21-30	27	29
31-40	6	7
41-50	8	9
51-60	2	2
61-70	1	1
71-80	1	1

Thus maximum number of patients (=67%) were between 11 and 30 years.

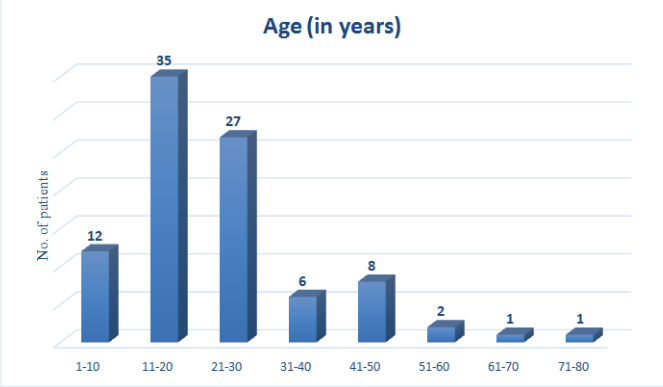

Fig. No. 2: There were 84 males (91%) and 8 females (9%).

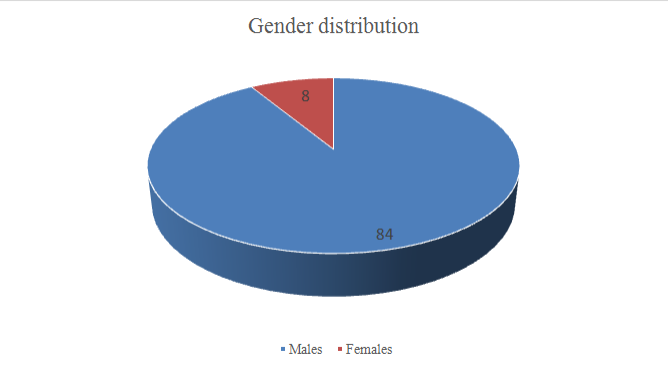

Fig. No.3.

Mode of injury: 38 patients had injuries related to pellet guns; out of the remaining 54 patients, 21 patients had blunt trauma, 18 patients had road traffic accidents, 12 patients had trauma due to sharp objects and 3 patients had trauma due to animal bites.

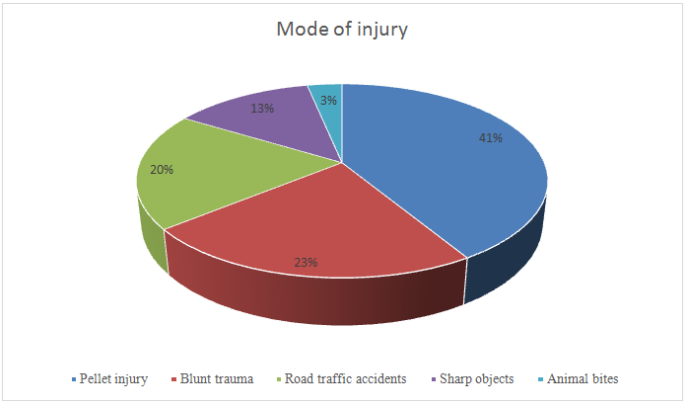

Fig. No. 4.

On presentation, 65 patients (71%) had hyphaema with or without additional injuries; 44 patients (48%) had corneal tear out of which 41 needed corneal tear repair; 16 patients (17%) had scleral laceration all of which needed primary repair; 10 patients had lid lacerations with 6 of them having canalicular tear.

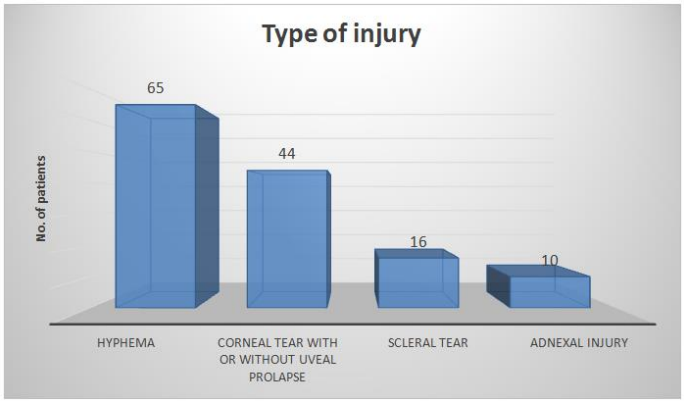

Fig. No 5: BCVA on presentation:

BCVA	No. of patients (Percentage)
PL –ve	2 (2%)
PL/PR	4 (4%)
HM	9 (10%)
CF	34 (37%)
6/60 to 6/24	21(23%)
6/18 or better	22 (24%)

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