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Original Research Paper

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OCULAR INJURY TREND IN COVID-19 ERA- A TERTIARY EYE CARE STUDY IN INDIA

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ABSTRACT

Aim- To study the change in demography and injury pattern of ocular trauma during the lockdown period tothat of a similar period of the previous year.

Materials & Methods- This is a retrospective analysis of the data of 362 patients with ocular trauma during the lockdown period from 25 March 2020 to 3 May 2020 and during a similar period of the previous year at a tertiary eye care center in India.

Results- There was a decrease of 62.87% of patients of ocular trauma during the lockdown period because of the restricted lifestyle. Although home related and violence-related trauma increased, there was a decrease in traffic and sports-related trauma. Patients with chemical injury by sodium hypochlorite also had a sharp rise. Majority of the patients presented after two days during this period.

Conclusion- Guidelines for mass health education and awareness about the risk of ocular trauma, morbidity caused by delayed presentation, and need to adopt safety or preventive strategies should be formulated so that future strategy can be planned to fight with the next pandemic or epidemic.

KEYWORDS : Covid-19, ocular trauma, India, awareness

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an acute respiratory disease caused by novel coronavirus, transmitted via multiple ways i.e. respiratory droplets, direct contact with cases, and also through contaminated surfaces and objects [1,2]. To decrease the acute pressure on health services, various measures have been taken to reduce the size and peak of the pandemic [3, 4]. The government of many countries including India used "lockdown" as their master weapon to contain the virus by breaking the chain of transmission [5]. In the state of complete lockdown, aviation, railways, and road transports were prohibited, restricting the movement of citizens other than for emergencies. Furthermore, all the commercial, academic, and sports activities were ordered to remain closed [4].

Ocular trauma can lead to devastating consequences and is considered as one of the major cause of ocular morbidity with a long term socioeconomic impact. It is the preventable cause of monocular and non- congenital visual impairment. Ocular trauma accounts for about 7 % of whole-body injuries and 10-15 % of eye diseases [6, 7].

Till now, there is no representative data in India to show the impact of Covid-19 directed social distancing on the spectrum of ocular trauma. In this study, we have compared the demography and injury pattern of ocular trauma during the lockdown period with that of a similar period of the previous year (non- lockdown period).

MATERIAL AND METHODS

The study was according to the tenants of the declaration of Helsinki. Data of the patients with ocular trauma were retrospectively analyzed from 25th March 2020 (i.e. the day in which the lockdown measures were applied in our city) to 3rd May 2020, and confronted with those of the same period of the previous year (from 25th March 2019 to 3rd May 2019). The study was approved by the Research Ethical Committee of Institute.

Patients with insufficient data were excluded from the study. The records were retrieved from the computerized database. Age, gender, the affected eye, cause and type of ocular trauma, and time interval from injury to the presentation were recorded. Ocular trauma was classified by the standardized Internationalclassification, Birmingham Eye Trauma Terminology System (BETTS). Type of ocular trauma was divided as home-related, sports-related, traffic-related, work-related, violence-related, and other or unknown.

The collected data were entered and analyzed using SPSS (version 17.0 Chicago, USA: SPSS Inc).

Categorical and numerical variables were analyzed as frequency and percentage.

RESULTS

In the 2019 study period, there were 264 cases of eye injuries and in the 2020 study period, cases decreased to 98. Mean age of the patient was 27.48 ± 15.88 years (range= 2-65 years) and 25.28 ± 14.38 years (range= 4-68 years) in 2019 and 2020 respectively. Although the percentage of children getting injured (0-14 years) was slightly more in the lockdown period,but the most vulnerable age range for ocular injury was of adolescents (15-29 years) in both the groups. (Table 1) (Figure 1a).

Table 1- Age And Sex Structure Of Study Participants

AGE GROUP (years)	2019 PERIOD			2020 PERIOD		
	MALE n (%)	FEMALE n (%)	TOTAL n (%)	MALE n (%)	FEMALE n (%)	TOTAL n (%)
0-14	39 (26.35)	30 (25.86)	69 (26.14)	22 (28.95)	7 (31.82)	29 (29.59)
15-29	52 (35.14)	38 (32.76)	90 (34.09)	21 (27.63)	11 (50.00)	32 (32.65)
30-44	27 (18.24)	22 (18.96)	49 (18.56)	15 (19.74)	3 (13.64)	18 (18.37)
45-59	20 (13.51)	18 (15.52)	38 (14.39)	14 (18.42)	1 (4.54)	15 (15.31)
≥60	10 (6.76)	8 (6.90)	18 (6.82)	4 (5.26)	0 (0.00)	4 (4.08)
TOTAL	148 (100)	116 (100)	264 (100)	76 (100)	22 (100)	98 (100)

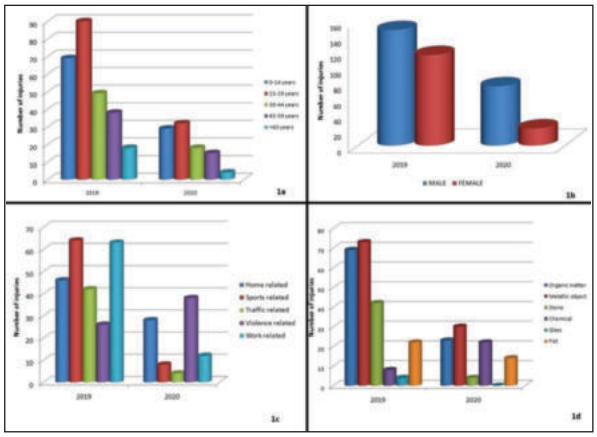

Figure 1- (a) Eye injuries categorized by age. (b) Eye injuries categorized by gender. (c) Eye injuries categorized by type of trauma. (d) Eye injuries categorized by mode of trauma The characteristics of eye injuries in the two study groups are reported in Table 2.

Table 2- Characteristics Of Eye Injury

CHARACTERISTICS	2019 PERIOD (%)	2020 PERIOD (%)
Total number of injuries	264	98
Sex (male/female)	148/ 116 (56.06/43.94)	76/ 22 (77.55/ 22.45)
Right eye/ left eye	134/130 (50.75/50.25)	41/ 57 (41.83/58.16)
Mean age (years)	27.48 ± 15.88 years	25.28 ± 14.38 years
Diagnosis Open globe injury	162 (61.36)	49 (50.00)
Penetrating	67 (25.38)	34 (34.69)
IOFB	(13.64)	(4.08)
Perforating	(0.75)	0 (0.00)
Rupture	57 (21.59)	11 (11.22)
Close globe injury	(23.11)	19 (19.38)
Contusion	34 (12.88)	10 (10.20)
Lamellar laceration	7 (2.65)	(2.04)
Superficial foreign body	20 (7.58)	7 (7.14)
Chemical burn of eye	8 (3.03)	22 (22.45)
Adnexal injuries of globe	33 (12.5)	8 (8.16)
Type of ocular trauma Home-related	46 (17.42)	28 (28.57)
Sports-related	(24.24)	8 (8.16)
Traffic-related	42 (15.91)	(4.08)
Violence related	26 (9.85)	38 (38.77)
Work-related	(23.86)	12 (12.24)
Other/ unknown	23 (8.71)	8 (8.16)
Object causing injury Organic (stick, thorn, twig)	69 (26.14)	23 (23.47)
Metallic (knife, scissor, wire, pen)	73 (27.65)	30 (30.61)
Stone	42 (15.91)	(4.08)
Chemical	8 (3.03)	22 (22.45)
Glass	(1.51)	0 (0.00)
Fist	22 (8.33)	14 (14.28)
Others	46 (17.42)	5 (5.10)
Time interval from injury to presentation 0-24 hours	68 (25.76)	14 (14. 29)
24-48 hours	93 (35.22)	(18.37)
2-4 days	(21.21)	32 (32.65)
>4 days	47 (17.80)	34 (34.69)

During the lock down period, the proportion of males with eye injuries increased (from 56.06% to 77.55%) (Figure 1b). Regarding the type of ocular trauma, sports-related and traffic-related injuries had the highest decrease (24.24 % to 8.16 % and 15.91 % to 4.08% respectively) while violence-related and home-related injuries had highest rise (9.85% to 38.77% and 17.42% to 28.57% respectively) (Figure 1c). Injuries with metallic objects and fist were the major mode of injury during the lockdown period.

Also, there was a sharp rise in chemical injuries to the eye (from 3.03% to 22.45%). The major culprit was sodium hypochlorite, which was used as a disinfectant. (Figure 1d). Most of the patients presented before 2 days (60.98%) in the 2019 study period while in the 2020 study period, most of the patients presented after 2 days (67.34%). In 2020, out of the 66 patients who presented after 2 days, 5 had endophthalmitis and 3 had corneal abscess while only 1 case had end ophthalmitis in the rest of the 32 cases.

DISCUSSION

Covid-19 pandemic has been a testing time for most of the nations of the world along with their governments, hospitals, and healthcare workers. Lockdown has indeed helped in flattening the curve but it also had an impact on the pattern of ocular trauma admissions in health facilities. As every nation has limited healthcare facilities compared to their populations, especially in a country like India, judicial use of them becomes more necessary. Thus, decreased trauma has helped hospitals to divert their infrastructure and manpower for treatment of Covid-19 patients preventing overburdening of hospitals and staff.

There was a striking decrease of 62.87% in the number of ocular injuries during the lockdown period. This is because people stayed at home and were only allowed to go out in case of emergencies and essential services. So the proportion of home-related and violence-related ocular trauma increased. All public transports, schools, industries, and factories were closed leading to less movement of people. Hence, there was a decrease in sports-related and traffic-related trauma. Hamroush A. et al [8] also reported that because of the lockdown, there was a rise in traumatic ocular injuries occurring at home mainly while doing gardening, home improvement projects or skipping rope causing elastic band injury The number of males is more in both the groups as males from a family are a major working force. Even during the lock down, males came out of their houses for essential activities and also more involved in assaults thus they form the major part of the patients in both the groups. Pellegrini, M. et al [9] also found the male preponderance in ocular trauma during the quarantine period. The mean age was almost similar in both the groups. There were minor changes in the number of

patients according to the age groups. The numbers of children injured were slightly more in the 2020 study period as they were at home due to closure of schools and had an injury while playing. Bapaye Maneesh M. et al. [10] highlighted the possibility of an increase in "bow and arrow" injury in the pediatric age group because of the rerun of mythological shows on a digital platform.

Furthermore, the impact of shielding and self-isolation and also the lack of public transport resulted in the delayed presentation (>2 days) of the majority of cases during the lockdown period. Hamroush A. et al [8] also reported the late presented ocular injuries with a grave prognosis. It is our belief that some patients may intentionally avoid the need for urgent eye care rather than risking coronavirus exposure at hospitals. Few reports have suggested that this also happened for life-threatening medical emergencies such as myocardial infarction and stroke [11, 12]. Since ocular trauma is a major cause of vision loss, the importance of urgent consultation without any delay either with nearby optometrist or with an ophthalmologist should be stressed to all the patients to prevent more serious ocular morbidities. Furthermore, clear guidance should also be issued to raise awareness regarding the potential ocular injuries. There is a dire need to spread knowledge about safety measures and protective gadgets.

A multicentre reporting of demographics across the country can be more useful and future studies should focus on that. This can be useful in preparing for future pandemics and epidemics by issuing guidelines for the judicial and fruitful use of the ophthalmic health services.

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