The impact of COVID-19 on ocular Trauma in Upper Egypt
Tertiary Trauma Center
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Abstract
Introduction: COVID-19 emerged as global health catastrophe which affected all activities. Ocular trauma regarding occurrence, pattern and mode is changed. Here we can evaluate that.
Purpose: In this retrospective study, we compared the occurrence of ocular trauma that came to ophthalmology department - Sohag University (tertiary center) in the period between 12March 2020 and 12 May 2020, during lock down with those occurred in the same period of the last year 2019.
Study design: retrospective study.
Materials and methods: in this retrospective study, the registered data of ocular trauma patients collected from ophthalmology department -Sohag University and they were analyzed.
Results: A significant decrease in ocular trauma by 71.3 percent (%) with a change in the mode of trauma and method of trauma. The mean age± (SD) before lockdown was 33.95±16.7, and after lockdown was 26.38±17.6.Significant increase in the assault from others in lockdown (P value ≤0.001) with a dramatic decrease in motor car accidents (MCA) (P value ≤0.001), significant increase in lid wounds, rupture globe and orbital fractures (P value ≤0.001).
Conclusion: the lockdown affected the occurrence of ocular injuries, mode, and type of trauma.
Keywords COVID-19, lockdown, ocular, trauma, type.

Introduction:
Ocular trauma represents a major emergency challenge that may lead to serious complications. Ocular injuries have a serious economic and social impact (1, 2) it may be due to falling from height, motor car accidents, firearms, sharp objects or assault from others. (3, 4)
Ocular injuries may be in the form of lid wounds such as lid lacerations, avulsed lid, corneal abrasions, rupture globe, ulcers, vitreous hemorrhage, hyphema or orbital fractures. It may be associated with other structures such as forehead, checks or even the head. (5)
COVID-19 has emerged as a catastrophic health problem all over the world and the lockdown was mandatory with strict guarantee that changed the behavior of the population, leading to a change in the incidence of ocular injuries. (6)
Aim of the study: In this retrospective study, we compared the incidence of ocular trauma that came to the ophthalmology department-Sohag University (tertiary center) in the period between 12March 2020 and 12 May 2020, during lock down period with those occurred in the same period of the last year 2019.
Ethical considerations:
Ethical approval was taken from the Sohag University ethical committee.
Written informed consent was taken from all patients.

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All investigations were done freely for all patients. Written consent was taken from Patients to publish their images.

Materials and Methods:
Records were gathered from the ophthalmology department - Sohag University, The following data were collected:

Age, Sex, Mode of trauma, Type of trauma, and Management.

Results:
Statistical analysis: The data collected were analyzed using SPSS (Statistical Package for Social Science) version 25 (IBM, Armonk, NY, USA) on a compatible computer.
Two types of statistics were done:

Descriptive statistics:
According to the type of data qualitative represented as number and percentage, quantitative continuous group represented by mean ± SD

Analytic statistics:
The non-parametric Chi-square test ($\chi^2$) was used to study the comparison and association between two qualitative variables that are not normally distributed.
A significant decrease in the number of cases 71.3% with a change and decrease in the mode of trauma and type of trauma as shown in (Table 1), which compares these parameters before and after lockdown.
The Mean age± (SD) before lockdown is 34.95±17.7While after lockdown it is 27.38±18.6, significant increase in assault from others (P value ≤0.001), with significant decrease in motor car accident MCA (P value ≤0.001).
The change in the type of trauma was observed significant increase in the lid wounds, avulsed lid, rupture globe and orbital fractures (P value ≤0.001).

Table 1: characters of the patients, mode of trauma, and type of trauma

| Characteristics          | Before lockdown | After lockdown | *P value |
|--------------------------|-----------------|----------------|----------|
| Mean age± (SD)           | 34.95±17.7      | 27.38±18.6     |          |
| Male/ Female             | 106/23          | 29/8           |          |
| Mode trauma (% of total) |                 |                |          |
| FFT                      | 19 (14.7%)      | 14 (37.8%)     | 0.000    |
| Assault                  | 18 (14%)        | 15 (40.5%)     | 0.008    |
| MCA                      | 82 (63.65%)     | 4 (10.8%)      | 0.000    |
| Sharp object             | 9 (7%)          | 4 (10.8%)      | 0.000    |
| Firearm                  | 1 (0.8%)        | 0              | 0.005    |
| Type of trauma           |                 |                |          |
| Brow wound               | 21 (16.3%)      | 8 (21.6%)      | 0.010    |
| Hyphema                  | 3 (2.3%)        | 5 (13.5%)      | 0.000    |
| Vitreous hemorrhage      | 5 (3.9%)        | 3 (8.1%)       | 0.008    |
| Lid wound                | 41(31.8%)       | 8 (21.6%)      | 0.010    |
| Orbital fracture         | 39 (30.2%)      | 11(29.7%)      | 0.000    |
| Rupture globe            | 7(5.4%)         | 1 (2.7%)       | 0.000    |
| Avulsed lid              | 13 (10.1%)      | 1 (2.7%)       | 0.005    |
| Total                    | 129             | 37             | 0.000    |

These changes are shown in figures (1, 2, and 3).
Figure 1: showing male to female ratio before and after lockdown.

Figure 2: showing the mode of trauma before and after lockdown.

Figure 3: showing the difference in the type of trauma before and after lockdown.
**Management:** This was done in ophthalmology departments at Sohag University.

Management occurred according to guidelines as follows:
Repair of lid wounds by direct closure, flaps or grafts. We used single or multilayer suturing with absorbable or non-absorbable sutures. In case of lid avulsion, canthoplasty needs to be done.

Regarding hyphema, conservation alone, evacuation alone or with trabeculectomy was done regarding the severity, the intraocular pressure (IOP) and the duration.
The vitreous hemorrhage was dealt with conservatively in many cases, with two cases needed vitrectomy. See (Figures 4, 5).
Rupture globe repaired urgently with follow-up of possible consequences.

**Figure 4:** Patient with hyphema and vitreous hemorrhage (Written consent taken to publish images)

**Figure 5:** Patient one day after repaired rupture globe (Written consent taken to publish images)

**Measures taken before repair in the COVID-19 era:**
Complete blood count (CBC), computed tomography chest (CT) and nasopharyngeal swaps became mandatory before any intervention, we discovered 5 cases with diagnosed as positive COVID-19, we applied the infection control measures with personal protection equipment (PPE) during intervention then they were rapidly guaranteed.

**Discussion:**
In the COVID-19 lockdown, life style was associated with behavioral changes. The reflection on the occurrence of ocular trauma was dramatic as well as the effect on its mode and its type. (7)
Assault from others increased due to the psychological effects of lockdown and increased time to stay home with others. MCA decreased due to decreased movement for all types of vehicles, including cars. (8)

In correlation with a study done by Blackhall KK et al. showed that the overall number of cases dramatically decreased during the lockdown. This is due to decrease the number of people attending hospitals, and decrease in the incidence of trauma such as MCA as most people stayed at home. The proportion of trauma occurred at home was significantly higher than that occurred outside of home. (9)

The huge upheaval of self-isolating and the higher reduction in social activities has been proposed as an important factor in individuals’ mental health. Being in close proximity with others, such as family members, through prolonged periods of time with more stress factors can result in heightened tensions, feelings of isolation, loneliness and worsening of mental health. (10)

Domestic violence victims are, in the vast majority, targeted by family members such as a spouse or member of their immediate household. (11)

References:
1. De Juan E, Sternberg P, Michels RG. Penetrating ocular injuries, types of injuries and visual results. Ophthalmology. 1993;90(11):1318-1322. doi:10.1016/s0161-6420(83)34387-6.
2. Esmaeli B, Elner SG, Schork MA et al., Visual outcome after penetrating trauma, a clinicopathological study. Ophthalmology. 1995;102(3):393-400. doi:10.1016/s0161-6420(95)31009-3.
3. Georgouli T, Pountos I, Chang BY et al., Prevalence of ocular and orbital injuries in polytrauma patients. Eur J Trauma Emerg Surg. 2011;37(2):135-140. doi:10.1007/s00068-010-0029-6.
4. Cheung CA, Rogers-Martel M, Golas L et al., Hospital-based ocular emergencies: epidemiology, treatment, and visual outcomes. Am J Emerg Med. 2014;32(3):221-224. doi:10.1016/j.ajem.2013.11.015.
5. Soni M, Khan IU, Jadoon Z. The pattern of ocular trauma in patients at Govt. Naseerullah Khan Babar Memorial Hospital, Peshawar (A study from 2010–2014). Ophthalmol Update. 2015;13(4):271–275.
6. Khanna RC, Honavar SG. All eyes on Coronavirus—What do we need to know as ophthalmologists. Indian J Ophthalmol 2020;68:549-53.
7. Cao W, Fang Z, Hou G et al., The psychological impact of the COVID-19 epidemic on college students in China. Psychiatry Research. 2020 doi:10.1016/j.psychres.2020.112934.
8. Asmundson G. J., Taylor S. (2020). Coronaphobia: fear and the 2019-nCoV outbreak. J. Anx. Disord. 70 1–2. 10.1016/j.janxdis.2020.102196.
9. Blackhall KK, Downie IP, Ramchandani P, et al. Provision of Emergency Maxillofacial Service During the COVID-19 Pandemic: A Collaborative Five Centre UK Study. Br J Oral Maxillofac Surg. 2020;58(6):698-703.
10. Ramon S. The Place of Social Recovery in Mental Health and Related Services. Int J Environ Res Public Health. 2018;15:1052.
11. Selic P., Pesjak K., Kersnik J. The prevalence of exposure to domestic violence and the factors associated with co-occurrence of psychological and physical violence exposure: a sample from primary care patients. BMC Public Health. 2011;11:621.