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Clinical Presentation and Outcomes of Festival Related Ocular Injuries: Holi and Diwali in Year 2019: A Tertiary Eye Hospital Ajmer Rajasthan India.

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Abstract:
Purpose:
Clinical presentation and outcomes of festival related ocular injuries in Holi and Diwali in year 2019
Methods:
A prospective study of patients presenting with festival related ie. colors and firecrackers ocular injuries in year 2019.
Results:
In holi, of the total 29 patients; 14 (73.68%) of were mild injuries, 4 (21.05%) of were moderate injuries and 1 (5.25%) of was severe injury seen. Majority were young adults male (between 21 and 30 years of age, >3/4th were males).
In Diwali, of the total 32 patients; 25 (78.13%) of were superficial injuries, 3 (9.37%) of were closed globe injuries and 4 (12.5%) of were open globe injuries seen. A majority of patients were children male below 20 years of age.
Conclusion:
Festival injuries may results in mild to severe form of ocular morbidity, resulting from complete recovery to left life-time impressions in eyes. Essence of festival will be maintained with awareness and following recommended guidelines.
Keywords: *Holi colors, Diwali firecracker, ocular injuries.*

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I. Introduction

Throwing of colors on each other is the hallmark of holi festival. Direct toxic effect of the chemicals or local inflammatory cytokines induced by the holi colors lead to toxicity from corneal epithelium to stroma and/or inflammatory reaction with generalized haze.[1-5] Ocular injuries during holi primarily involve the young population. [5,6]

Firecracker injuries are common during the festival of 'Diwali' where traditionally, firecrackers form an essential part of the celebrations.[7] and also as celebrations in new years, Christmas, etc. Firecracker injuries can cause serious and irreparable damage to vision. Such injuries are very common among children. [8,9]

Ocular injury in holi is chemical in nature while in diwali it is thermal and/or blast in nature. However, these festivals may be marred by alarming health problems. These injuries constitute an important cause of preventable blindness.

In order to preserve the essence of the festivals; public awareness about nature, personal safety by public health education programmes and media; and following recommended guidelines regarding personal safety measures and first aid. These can decrease festival related ocular injuries significantly.

Government should imposed prohibition of manufacturing and sale of contaminated colors and court orders of prohibited illegal sales and time bound of firecrackers.

II. Material And Methods

A prospective study involving the patients presenting with festival firecracker and colours - related ocular injuries in years 2019.

Although most patients were treated on outpatient basis and severe injured were advised admission for further management, intervention or observation.

Detailed ocular examination, i.e., initial visual acuity, adnexal, anterior segment examination by slitlamp biomicroscopy, intraocular pressure (IOP) measurement and fundus examination. USG scan was carried out to assess posterior segment status, particularly retinal detachment, vitreous haemorrhage and to rule out retained intraocular foreign body (IOFB) in patients with hazy media. X-ray of the orbit was done to rule out retained IOFB in all patients.

III. Results

Chemical injury caused by holi colors did not fit into the conventional Roper Hall and Duas classification, So different classification given here by us in absence of limbal ischemia.

A) Mild Grade: include superficial foreign body, conjunctival tear, subconjunctival hemorrhage, corneal epithelial defect.

B) Moderate Grade: superficial stromal hazyness iris details seen or color and/ or it's particle in superficial stroma.

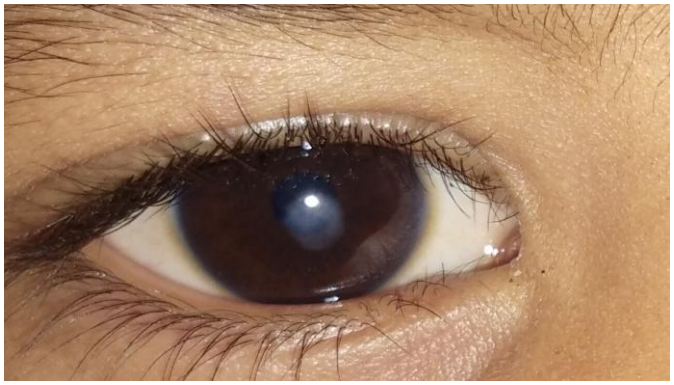
C) Severe Grade: deep stromal haze iris details obscured, anterior chamber reaction or hyphema.

Fire-realted injuries were classified according to Birmingham eye trauma terminology system (BETTS).

A) Superficial ocular injuries include conjunctival, corneal epithelial defect, superficial foreign body

B) Closed globe/ blunt ocular injuries: corneal abrasion/laceration, iridodialysis, phacodonosis, lens subluxation / dislocation, vitreous hemorrhage, berlin's edema / macular edema, retinal detachment, etc.

C) Open globe injuries: penetrating, perforating, ruptured globe, intraocular foreign body (IOFB).



Picture:1- Central corneal opacity after 4 weeks color injury

Picture :2- Auto-eviscerated firecracker injury

Table : 1 Presenting ocular conditions

HOLI COLOURS TOXICITY		DIWALI FIRECRACKERS INJURIES	
Mid	14 (73.68%)	Superficial	25 (78.13%)
Moderate	4 (21.05%)	Closed globe	3 (9.37%)
Severe	1 (5.25%)	Open globe	4 (12.5%)
Total	19	Total	32

In holi majority were young adults male, (between 21 and 30 years of age, >3/4th were males) and in diwali majority were children male below 20 years age.

Most of patients managed with medical treatment, after 3 to 4 weeks 2 patients developed nebular corneal opacity due to colors toxicity; and one patient developed cataract, two patients operated for corneal and corneo-scleral tear repair, one patient presented with auto-eviscerated/ multilacerated wound with no perception of light with firecracker injury.

Table:2 Presenting and final best corrected visual acuity (BCVA)

	HOLI FESTIVAL		DIWALI FESTIVAL	
VISUAL ACUITY	Presenting VA	Final VA	Presenting VA	Final VA
>20/40	14 (73.68%)	19 (100%)	16 (50%)	25 (78.12%)
20/40-20/200	4 (21.05%)	0	10 (31.25%)	4 (12.5%)
CF-HM	1 (5.26%)	0	5 (15.62%)	2 (6.25%)
No-PL	0	0	1 (3.12%)	1 (3.12%)
TOTAL	19	19	32	32

Table:3 Complications

HOLI FESTIVAL		DIWALI FESTIVAL	
Raised IOP	2	Raised IOP	2
Corneal opacity	2	Hypheama	2
		Cataract	1
		Corneal/corneo-scleral tear	2
		Auto-eviscerated	1

Table 1 and 2 showing holi colours toxicity was short in time and left few complications as compare to diwali; whereas diwali injuries were highly morbid and may not fully recovered.

IV. Discussion

This study was a hospital-based, single-center, prospective case series of festival injuries in year 2019. The injuries reported with wide range of manifestations.[1,5,7,10-13]

This was observed clinically and measured visual acuity; presenting and after intervention or follow up.This may results in mild to severe form of ocular morbidity. These injuries constitute an important cause of preventable blindness. Holi colors toxicity is common among young adults and firecracker injuries is very common among children. [1,5-9]

Government imposed prohibition of manufacturing, sale and use of these adulterated/ contaminated chemicals colors are mandatory and court orders of prohibited illegal sales and time bound of firecrackers. So effects of these notification of can also influence the injuries.[1,14]

In order to preserve the essence of the festivals, other alternatives ways of celebrations such as flowers and playing games which is not hazardous to people and nature, awareness and following guideline. These can decrease festival related ocular injuries significantly.

V. Conclusion

Festival injuries may highly morbid in nature resulting from complete recovery to left life-timeline impression in eyes. Essence of festival will be maintained with awareness and following recommended guidelines.

References

[1]. S Gupta, H Selvan, A Markan, and V Gupta. Holi colors and chemical contact keratitis, Eye (Lond). 2018 Jan; 32(1): 1–3.Published online 2017 Oct 20. doi: 10.1038/eye.2017.223[PubMed]

[2]. Ocular Chemical Injuries: Chemical Characterizations and Clinical Profile Correlations. ResearchGate. [cited 2017 Jul 7]. Available from https://www.researchgate.net/publication/265047278_Ocular_Chemical_Injuries_Chemical_Characterizations_and_Clinical_Profile_Correlations.

[3]. Velpandian T, Saha K, Ravi AK, Kumari SS, Biswas NR, Ghose S. Ocular hazards of the colors used during the festival-of-colors (Holi) in India—malachite green toxicity. J Hazard Mater. 2007; 139(2): 204–208. [PubMed] [Google Scholar]

[4]. Bossmann K, Bach S, Höflich C, Valtanen K, Heinze R, Neumann A et al. Holi colours contain PM10 and can induce pro-inflammatory responses. J Occup Med Toxicol 2016; 11: 42. [PMC free article] [PubMed] [Google Scholar]

[5]. Pujari A, Behera A, Mukhija R, Chawla R, Yadav S, Sharma N. Ocular toxicity due to colours used during holi celebration in India: correlation of clinical findings with the anterior segment OCT.Cutan Ocul Toxicol. 2019 Mar;38(1):1-4. doi: 10.1080/15569527.2018.1495225. Epub 2018 Sep 10.[PubMed]

[6]. Dada T, Sharma N, Kumar A. Chemical injury due to colours used at the festival of Holi. Natl Med J India. 1997; 10(5): 256. [PubMed] [Google Scholar]

[7]. Ravi Kumar, Manohar Puttanna, K S Sriprakash, B L Sujatha Rathod, and Venkatesh C Prabhakaran. Firecracker eye injuries during Deepavali festival: A case series. Indian J Ophthalmol. 2010 Mar-Apr; 58(2): 157–159.

[8]. Mohan K, Dhir SP, Munjal VP, Jain IS. Ocular fireworks injuries in children. Afro-Asian J Ophthalmol 1984;2:162-65.

[9]. Dhir SP, Shishko MN, Krewi A, Mabruka S. Ocular fireworks in children. J Paediat Ophthalmol Strabismus 1991;28:1-2.

[10]. Arya SK, Malhotra S, Dhir SP, Sood S. Ocular fireworks injuries. Clinical features and visual outcome. Indian J Ophthalmol. 2001;49:189–90. [PubMed] [Google Scholar]

[11]. Puri V, Mahendru S, Rana R, Deshpande M. Firework injuries: A ten-year study. J Plast Reconstr Aesthet Surg. 2009;62:1103–11. [PubMed] [Google Scholar]

[12]. Chang IT, Prendes MA, Tarbet KJ, Amadi AJ, Chang SH, Shaftel SS, et al. Ocular injuries from fireworks: The 11-year experience of a US level I trauma center. Eye (Lond) 2016;30:1324–30. [PMC free article] [PubMed] [Google Scholar]

[13]. Jing Y, Yi-Qiao X, Yan-Ning Y, Ming A, An-Huaai Y, Lian-Hong Z, et al. Clinical analysis of firework-related ocular injuries during spring festival 2009. Graefes Arch Clin Exp Ophthalmol. 2010;248:333–8. [PubMed] [Google Scholar]

[14]. Amar Pujari, Atul Kumar, Rohan Chawla, Sudarshan Khokhar, Divya Agarwal, Meghal Gagrani, Namrata Sharma, and Pradeep Sharma. Impact on the pattern of ocular injuries and awareness following a ban on firecrackers in New Delhi: A tertiary eye hospital-based study.Indian J Ophthalmol. 2018 Jun; 66(6): 837–840.

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