



Demographic Distribution of Patients with Ocular Pellet Injury from Kashmir Valley, the Highly Militarized Conflict Region in the World

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ABSTRACT

Objective At present the literature available about pellet injuries to eyes is almost negligible, the reason being that pellet guns are rarely used anywhere else in the world except Kashmir valley. Our main objective of this study was to see the demographic distribution of ocular pellet injury patients.

Methods This was a hospital based prospective study in which we recorded the demographic data of 268 patients who presented to our hospital with ocular pellet injury and subsequently analyzed that data. This study was conducted from 2016-2019.

Results The mean age of patients was 21.4 years with SD of 7.2 years. The age ranged from 08-37 years. Males were 246 (92%) and females were 22 (8%). Maximum number of patients, 216 (80%) were in the age group of 15-25 years. Right eye was involved in 124 (46%) patients, left eye was involved in 116 (43%) and 28 (11%) patients had involvement of both eyes. Out of 268 patients, 196 (73%) presented to hospital on the same day within few hours of incident.

Conclusion Till the end of mankind we cannot expect an end to conflicts keeping in consideration the human nature. Pellet injuries in eyes is not uncommon in the world where ever there is conflict. From our observations we conclude that pellet ocular injuries occur mainly in young boys, because mostly they take part in protests in Kashmir.

Keywords: Conflicts, Ocular injury, Shotgun pellets

INTRODUCTION

In the state of Indian Kashmir, the world's most militarized territory, medical evidence is growing to show the lethal effects like blindness of eye, caused by metal pellets fired from shotguns by troops on protesters whenever there is a standoff between them. The ongoing use of the indiscriminate pellet guns has blinded more than 1500 people in Kashmir since 2016 alone. The so-called non-lethal weapon has also caused deaths since it was introduced in the territory during the public uprising of 2010. At present the literature available about pellet injuries to eyes is

almost negligible, the reason being that pellet guns are rarely used for mob control anywhere else in the world except Kashmir valley. In rest of the world the pellet injury to eyes is accidental. Very few studies have been conducted on this topic till date¹⁻³. Pellets are small hard-ball, hour-glass shaped projectiles which travel at very high velocity and temperature when fired from an air gun. They are very lethal when they enter into the eye. Pellets are divided into lead and non-lead, based on the substances they are manufactured with. The extent of eye damage

depends on several factors: shape and type of pellet, its velocity, tissue resistance and distance from which the pellets are fired^{4,5}. Few studies have concluded that perforating injuries with involvement of posterior segment structures have extremely poor prognosis⁶⁻⁸.

MATERIAL AND METHODS

The present study was conducted in the postgraduate department of ophthalmology SKIMS medical college and hospital srinagar. This was a prospective study, in which 268 patients were included and analyzed from 2016-2019. The study was approved by ethics committee of our institution. In all our patients information regarding the age, sex, gender, laterality, type of injury like penetrating, perforating or avulsive (**Figure-1**), time gap between injury and presentation to the hospital, site of pellet impact (**Figure-2**), periocular tissue injury, visual acuity at the time of admission to hospital, presence or absence of foreign body (projectiles) inside the eye, condition of anterior segment, status of crystalline lens and posterior chamber was collected for analyses. In many patients B-scan imaging was done, were ocular media was not transparent enough to allow proper examination of eye. Few patients required Computed Tomography (CT) scan, in those who gave ocular trauma history by pellets but B-scan did not locate any intraocular foreign body. Majority of the patients were operated under local anesthesia. Topical or intravenous antibiotics were given to patients in order to control and prevent the eye infection. Those patients having vitreoretinal involvement to such an extent that we could not manage ourselves because of less expertise in vitreoretinal surgery, were either referred to experienced vitreoretinal surgeons of higher centers outside the state of J&K, or we got an experienced surgeon from other states of country on request for further treatment of these patients.

RESULTS

In this study we analyzed 268 patients who presented to our hospital with pellet injuries to their eyes. The mean age of patients was 21.4 years with SD of 7.2 years. The age ranged from 08-37 years. Males were 246 (92%) and females were 22 (8%). Maximum number of patients, 216 (80%) were in the age group of 15-25 years. Right eye was involved in 124 (46%) patients, left eye was involved in 116 (43%) and 28 (11%) patients had involvement of both eyes. The

demographic data including age, gender, laterality etc. are presented in **Table-1**. The clinical findings of ocular pellet injury were as follows; most common site of injury was cornea in 98 (36.5%) of patients, maximum number of patients 185 (68%) were having penetrating type of injury, presence of foreign body was present in 241 (90%) of cases, lid was involved in 11 (4%) cases. Visual acuity varied from defective perception of light/ray in 93 (35%) patients to vision of 6/6 in only 38 (14%) of patients, rest of the patients were having visual acuity in between them. Vitreous hemorrhage was noted in 164 (61%) of cases.

DISCUSSION

Presently very little literature is available about ocular injuries due to pellets. Few studies have recorded the impact of accidental injuries to eye as a result of pellet guns. Hardly we can find this much of patient load of ocular injuries due to short gun pellets anywhere in the world. In our study the mean age of patients was 21.4 years with SD of 7.2 years. Almost similar results were noted in a study of 105 cases with ocular air gun injuries from England by Shuttleworth et al., in which 74% of patients were under 18 years of age with a mean age of 17.5 ± 9.12 years¹. The age group mostly affected in the study conducted by Francis Kwasi et al.⁹ was between 10 to 35 years with a mean of 19.9 ± 5 years. In contrast to our study, a report regarding air gun injuries from New Zealand by Langley et al.¹⁰, concluded that most common age group involved was under 14 years. From these results we see a growing trend of young boys in their teen age get involved in protests against troops in war torn conflict zones. In the present study, the males were 246 (92%) and females were 22 (8%). Our results were at par with the findings recorded by Francis Kwasi et al.⁹, they noted that out of 32 patients who were affected, 30 (93.75%) were males and the other 2 (6.25%) were females. Patel et al., in a review of 202 cases of penetrating eye injury have noted a 4.66:1 male to female ratio¹¹. Bowen et al., in their study of 105 cases with pellet gun injuries from England have reported a 7.5:1 male to female ratio¹². In another series of 718 cases of air gun injuries from New Zealand by Langley et al.¹⁰ this ratio was 6:1. As we all know that males take part in conflicts proactively as compared to females.

Ocular pellet injury is generally a problem of one eye but it may be bilateral. In our study we noted that right eye was involved in 46% and left eye in 43% of patients. In addition to this both eyes were involved in 11% of cases. Similarly bilateral involvement was reported by Assaf et al. in his study¹³. Francis Kwasi et al.⁹ in their study recorded that out of the 32 patients only 3.13% had bilateral impact. Majority of our patients were admitted on the same day (73%). Shuttleworth et al.¹ have reported that, the majority of their cases having air gun ocular injuries presented in no time following their injury except two cases who had very delayed presentations. In our study, we found that foreign body was present in 241 (90%) cases. Tabatabaei SA, et al.¹⁴, in their study, reported that foreign body was present in 97 patients out of 116 patients (83%), and 75% in the study by Shuttleworth et al.¹

CONCLUSION

Till the last day of this world we cannot expect an end to conflicts keeping in consideration the human nature. Pellet injuries in eyes is not uncommon in the world where ever there is armed conflict. From our observations we conclude that pellet ocular injuries occur mainly in young boys, because mostly they take part in mob violence against troops in Kashmir valley. Initially pellets were thought that they are non-lethal, but considering its fatal nature on human eyes, government policy makers can rather look for use of some other non-lethal weapons at the site of conflicts.

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Table-1: Demographic data of patients

Parameter	Statistics	Value
Age in years	Mean with SD	21.4 + 7.2
	Range	08-37
Age groups	<15	16 (6%)
	15-25	216 (80%)
	25.1-35	32 (12%)
	>35	4 (2%)
Sex	Males	246 (92%)
	Females	22 (08%)
Laterality	Right eye	124 (46%)
	Left eye	116 (43%)
	Both eyes	28 (11%)
Time period between injury and presentation	Same day of injury	196 (73%)
	After one day	48 (18%)
	2-3 days	19 (7%)
	4-5 days	5 (2%)
	After 5 days	0 (0%)

Figure- 1. Penetrating pellet injury to upper eye lid.

Figure- 2: Pellet injury to eye ball.

