

Visual Outcome in Ocular Pellet Injuries in Tertiary Care Hospital in Kashmir Valley

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ABSTRACT

Objective: To study Visual Outcome in Ocular Pellet Injuries in a Tertiary care Hospital.

Materials and Methods: 150 patients who presented to the Department of Ophthalmology, Govt. Medical College Srinagar between July 2016 to January 2017, were included in the study. Patients of both genders, ranging from 8 to 50 years of age, presenting with ocular trauma due to pellets were included in the study.

Results: The calculated sample size in the study was 150 Eyes of 150 patients. Out of these 150 patients, 148 (98.7%) were males and 2 (1.3%) were females. The mean age of our study group was 22.3 years. The youngest patient in our study was 8 years old and the eldest patient was 49 years of age. 80% of the patients were below the age of 30 years.

In our study 14% of cases had good final corrected VA, 22.33% had fair final corrected VA and 56.67% had poor final corrected VA that is more than half of the patients had final corrected VA less than 6/60.

Conclusion: Our study concludes that pellet injuries have mutilating effect on eyes affecting both vision and cosmesis. Adolescents were found to be more vulnerable to such trauma.

Appropriate identification of ocular damage and timely management is mandatory to reduce the morbidity associated with such injuries.

Key Words: VA (Visual acuity); RAPD (Relative afferent pupillary defect); PVR (proliferative vitreoretinopathy); IOFB (Intra ocular foreign body).

INTRODUCTION

Ocular trauma is a leading cause of monocular blindness, second only to cataract. Trauma is considered to be one of the most common causes of monocular blindness.^[1]

Ocular trauma is an important worldwide cause of preventable morbidity and accounts for half a million cases of monocular blindness worldwide.^[2-6] Various factors that have been found to correlate significantly with visual outcome post ocular trauma include age,^[8] type or mechanism of injury,^[3,9-13] initial VA,^[3,11-13] presence of RAPD,^[8,11-14] extent of

wound and size of open globe injury,^[3,11-13] and presence and type of intraocular foreign body.^[15]

Penetrating ocular trauma is an important cause of monocular blindness. Prompt diagnosis and treatment, preferably within first 24 hours are essential for the best possible prognosis.^[7]

Ocular trauma is one of the leading causes of preventable blindness. Pellet injuries are devastating form of ocular trauma with a poor visual prognosis. Pellet is a non spherical projectile designed to be fired from a gun. A cartridge of a pellet gun contains few hundred pellets made of lead.

When fired, the cartridge disperses hundreds of pellets over several hundred meters. Pellets penetrate soft tissues and being a delicate structure, eye is most vulnerable to damage. Pellets cause penetrating and perforating injury of eye.

The surgical repair of perforating globe injuries is a complex process due to the multiple globe defects, the high rate of associated proliferative vitreoretinopathy (PVR), and the challenges of managing the exit wound.

MATERIALS AND METHODS

This study was carried out on 150 patients who presented to the Department of Ophthalmology, Govt. Medical College Srinagar between July 2016 to January 2017. Patients of both genders, ranging from 8 to 50 years of age, presenting with ocular trauma due to pellets were included in the study.

Wide Spectrum of both anterior and posterior segment injuries was encountered:

Lid Laceration, Hyphaema, Marked Iridodialysis, Cataract, Vitreous Hemorrhage, Retinal Detachment, Retained Intra ocular foreign body, Pellet abutting optic nerve, Evisceration.

Visual acuity was done with Snellen chart when possible or finger counting was taken when subject's condition did not permit. A detailed slit-lamp examination and fundus examination was done. Ct-scan was done to see IOFB. B-scan was done in patients with media opacities. Visual acuity was taken at the presentation. Informed consent about surgery was taken. Primary repair was performed within 12hrs of presentation with intravitreal antibiotics. Secondary procedures were performed after 1-2 weeks. Standard 3port 23G vitrectomy was performed. A core vitrectomy was first completed to remove vitreous debris, and PVD was induced, PVD was then extended to the periphery. IOFB was removed in patients with retained IOFB. The vitreous base was shaved using sclera depression. Vitreous was removed from the exit wounds and endolaser around exit wound was done.

Follow up visits were done after one week, 2weeks, 1 month, 2months and 6 months postoperatively. Visual acuity was recorded on each visit with Snellen chart.

The final visual outcome was measured using a Snellen chart and graded as follows:

Good (visual acuity > 6/18)

Fair (visual acuity 6/18 - 6/60)

Poor (visual acuity < 6/60)

RESULTS

The calculated sample size in the study was 150 patients. Out of these 150 patients, 148(98.7%) were males and 2 (1.3%) were females. The mean age of our study group was 22.3 years. The youngest patient in our study was 8years old and the eldest patient was 49 years of age.80% of the patients were below the age of 30 years.

The VA on admission is shown in table 2 and the final corrected Visual outcome is demonstrated in table 3.

About 18% of eyes had VA of no perception of light (PL-) at the time of presentation and about 20.665 of eyes had only perception of light (PL+) at the time of presentation, reflecting severe retinal damage and optic nerve damage.

In our study 14% of cases had good final corrected VA,22.33% had fair final corrected VA and 56.67% had poor final corrected VA that is more than half of the patients had final corrected VA less than 6/60.

Table-1: Age Distribution of Study Subjects

Age in Years	No. of patients	%age(app)
< 10	04	2.66
10 – 20	67	44.67
20-30	49	32.67
30-40	25	16.67
40-50	05	03.33
Total	150	100.0

Table-2: VA on admission

VA	No. of patients	% age (app)
> 6/12	10	6.67
6/12 - 6/24	10	6.67
6/24 - 6/60	20	13.33
< 6/60	21	14.00
HM	40	26.67
PL	31	20.66
No PL	18	12.00
Total	150	100.00

Table-3: Final visual Outcome

Visual Outcome	No. of patients	% age (app)
Good (> 6/18)	21	14.00
Fair (6/18 - 6/60)	44	29.33
Poor (< 6/60)	85	56.67
Total	150	100.00

DISCUSSION

Ocular injury is an important and preventable cause of ocular morbidity. [16]

Over the past few years, pellet guns are being used in Kashmir valley to disperse violent mobs.

When a pellet cartridge bursts hundreds of tiny metallic particles jet out and penetrates skin and eyes, rupturing them before getting lodged and eye being the delicate structure is the most vulnerable to damage.

Four types of injuries have been identified due to these pellets:

Type I: - Contusion of the eye ball, no penetration.

Type II: - Single rent in the outer coat of eye ball, damage is caused by pellet hitting the eye ball and ricocheting off.

Type III: - Single rent with penetration and retained intra ocular foreign body.

Type IV: - Double perforation, pellet passing through the eye ball.

We studied 150 patients who presented to our institution with a wide spectrum of eye injuries resulting from pellets. Out of these 150 patients, 148 (98.7%) were males and 2 (1.3%) were females. The mean age of our study group was 22.3 years. The youngest patient in our study was 8 years old and the eldest patient was 49 years of age. 80% of the patients were below the age of 30 years. Both hospital and population based studies indicate a large preponderance of ocular injuries affecting young males [17-20] as was the case in our study.

The final VA is a significant indicator of the extensive, disruptive nature of these ocular pellet injuries and despite advanced microsurgical techniques, in our study 56.67% of injured eyes have a final VA of less than 6/60 (poor VA category), compared to earlier reports [21-23] in which

29-42% of the cases were in poor VA category.

The prognosis for penetrating eye injury is poor. In our study we found that the most important factor predictive of a poor visual outcome was poor visual acuity at presentation. This is in agreement with other studies. [24-26] Other factors associated with a poor visual outcome included delayed presentation in the hospital, presence of RAPD, retinal detachment, retained IOFB and macular scarring.

The corrected final VA also depends upon the type of injury. In patients with type IV ocular injury, the final corrected VA is less than 6/60 (poor VA category).

In our study the commonest causes of poor VA were central corneal opacity, retinal detachment, macular scarring, and optic atrophy.

CONCLUSION

Our study concludes that pellet injuries have mutilating effect on eyes affecting both vision and cosmesis. Adolescents were found to be more vulnerable to such trauma. Parents and school teachers need to counsel these children. Authorities need to use non lethal weapons for crowd control and exercise maximum restraint. Since the zone of injury and severity of initial wound were the main predictors of outcome, prevention is the only way out of this sight threatening entity.

Appropriate identification of ocular damage and timely management is mandatory to reduce the morbidity associated with such injuries.

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