

Original Research Article

Modes and Impacts of Agriculture Related Ocular Injury

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ABSTRACT

Introduction: Farmers are more prone to ocular injuries, commonly corneal injuries during the period of harvesting due to accidental injury with rice and cattle if untreated can lead to blindness.

Aims: To find out the mode and impact of ocular injury in farmers in the region of District of Burdwan, West Bengal, India.

Materials: All patients admitted in the Department of Ophthalmology Burdwan Medical College with ocular injuries related to farming were included in this study. This study was carried out June 2012 to May 2013. Patients of age 18 and above were included in this study. Minimum age was 18 years.

Results: Total 196 patients were admitted during the study period with the history of agriculture related ocular diseases. Male (M) was more common than female (F), male and female ratio was 3:1.

Most common age group was 31-44 years, which was 34.69% (68). Most common mode of ocular injury was due to rice grain injury, 53.57% (105). Common causes of hospital admission was corneal ulcer, 42.35% (83) followed by traumatic hyphema 20.92% (41). Majority of the cases were recovered within second week, 56.13% (110). Visual outcome was excellent in 76.53% (150) cases.

Conclusion: There is a great need to be more safety-conscious during the agriculture works. Encouragement to use protective goggles and increased awareness about minor trauma related ocular morbidities especially corneal ulcer.

Key word: farmer, ocular injury, protective goggles.

INTRODUCTION

Ocular injury is common in farmers during agriculture work. It was seen that agriculture related ocular injury is the most common among farmers in the developed world.^[1] The prevalence of ocular injury in agriculture-workers is unknown in India but data from few studies seem to suggest that this may be common.^[2,3] In India and other developing countries superficial injury

causing corneal abrasion in agriculture-worker is a major risk factor for causation of microbial keratitis.^[4] Fungal corneal ulcer is very difficult to diagnose and treatment.^[5] It is seen that ocular injuries are most common in farmers and the risk of developing fungal corneal ulcer seems to be very high frequently associated with a minor trauma of vegetable matters. Regional variation of ocular injury is well known. This study was

undertaken to find the causes of ocular injury in farmers in the region of Burdwan, West Bengal, India.

METHODS

This study was carried out in the Department of Ophthalmology, Burdwan Medical College, a rural based medical college in West Bengal, India. This study was undertaken for a period of 12 months, June 2012- May 2013. Patients aged 18 years or above with agriculture related ocular injuries and admitted in the inpatients department were included in this study. The data was collected in respect to mode of injury, symptoms, time of presentation, management and outcome. Initial visual acuity was taken in all the patients and underwent Slit lamp examination with documentation of corneal lesion after staining with fluorescent strip. Site, shape, size, margin and floor of the ulcer were recorded regularly. Anterior chamber reaction, hypopyon, hyphema was measured and recorded. All patients underwent

empirical antimicrobial therapy and related medication. Final visual acuity (BCVA) was taken before discharge of the patients.

RESULTS

Total 196 patients were admitted during the study period with the history of agriculture related ocular diseases. Male (M) was more common than female (F), male and female ratio was 3:1.

Most common age group was 31-44 years, which was 34.69% (68). Most common mode of ocular injury was due to rice grain injury, 53.57% (105). Common causes of hospital admission was corneal ulcer, 42.35% (83) followed by traumatic hyphema 20.92% (41). Majority cases were recovered within second week, 56.13% (110). Visual outcome was excellent in 76.53% (150) cases. Table 1 Showing Age, Sex distribution, Mode of Injury and Visual outcome of study population. Table 2 showing clinical diagnosis of study population and Table 3 showing hospital stay of study population respectively.

Table 1: Showing Age, Sex distribution, Mode of Injury and Visual outcome of study population.

AGE (YEARS)	SEX	PERCENTAGE (%)	MODE OF INJURY			VISUAL ACUITY (VA)			
			Causes	No of Cases	%	Initial	Final (BCVA)	Cases	%
18-30	M=29	14.79	Rice grain	M= 78	39.79%	6/9-6/12	6/6	68	34.69
	F=11	5.62		F= 27	13.77%				
31-44	M=49	25.00	Paddy leaves	M= 35	17.86%	6/18-6/36	6/6-6/12	82	41.84
	F=19	9.69		F= 8	4.08%				
45-55	M=47	23.97	Cattle tail	M= 25	12.76%	6/60 and above	6/18-6/24	35	17.86
	F=13	6.64		F= 12	6.12%				
56-65	M=22	11.23	Cow horn	M= 9	4.59%	NO PL	-	11	5.61
	F=6	3.06		F= 2	1.03%				
TOTAL	196	100%		196	100%			196	100%

Table 2: Showing clinical diagnosis of Study population.

Diagnosis	No of cases	Percentage (%)
Corneal ulcer	83	42.35
Traumatic hyphema	41	20.92
Chemical injury	15	7.65
Orbital cellulitis	12	6.12
Preseptal cellulitis	13	6.64
Rupture globe	11	5.61
Traumatic uveitis	9	4.59
Rupture corneal ulcer	2	1.02
Miscellaneous	10	5.10
Total	196	100%

Table 3: Showing hospital stay of study population in week.

Hospital stay	No of cases	Percentage (%)
First week	63	32.14
Second week	110	56.13
Third week	23	17.73

DISCUSSION

Burdwan is the only district in the state of West Bengal, India that is fortunate both in industry and agriculture. On an

average about 58% of the total population belongs to the agricultural population while 42% belongs to non agricultural sector. Rice is the most important crop of the district.^[6]

Farmers are at risk for work related eye injuries, some of which can be very serious.^[7] We found an increased occurrence of injuries in males compare to female. This finding is corroborative with the findings from South India.^[8] Rice grain and leaves accounted for the maximum number of injuries in our study. Rice is a major crop grown in South Eastern region of the District of Burdwan. Ocular injuries are more commonly occur during harvesting. The rice leaves have sharp edges. Cattle tail being another common source of injury accidentally hit the eye of the farmer during bathing and washing the cattle. Fall of dust, insect, acid, iron dust, tree bark injury were the other causes of ocular trauma in our study and commonest site was cornea. Paddy, tree branch, dust, vegetable matter, animal matter, metallic foreign body, miscellaneous objects, finger nail and unknown accounted for 25.40 %, 18.70 %, 18.0%, 15.10 %, 5.60 %, 4.90 %, 4.90 %, 4.20 and 3.20 % of total cases of corneal injury respectively in a Southern Indian study.^[9] Animal mater caused only 5.60 % of injuries in their study. In comparison to 26.60 % (n=718) of animal mater corneal injury in a study of North India,^[10] it is nearer to our study 24.48%(48). This can be due to lack of awareness regarding cattle tail induced corneal injury and out of place involvement of cattle during harvesting. Corneal injury, even trivial, is a predisposing factor for development of corneal ulcer. In a study in South India (n= 1353), 54.4% cases fungal keratitis preceding history of trauma typically in agricultural.^[11] Administration of prophylactic antimicrobial within 48 hours resulted in healing in corneal abrasion without sequel.^[8] In our study majority

patient was recover more or less in two week, it is 43% in a door-to-door survey in a North India.^[10] All the open globe injury caused by cow horn was lost. Final visual recovery was excellent in majority of the cases this was possible due to early intervention and prompt treatment of the cases.

The regional information is important as the causative agent and pattern of ocular injury varies significantly from region to region with regard to facilities empirical management. Prevention of injury itself by using protective goggles, head gear during the agriculture work is a cheaper and more feasible option.^[10]The study limitations were the small sample size, non-availability of vision record prior to injury and the long term follow up.

CONCLUSION

The farmers are at risk for ocular injuries during field activities. Rice and cattle are major source of trauma in the farmers, District of Burdwan, West Bengal, India. Increase awareness amongst the farmers and villagers regarding the use of protective glasses/head gear to reduce the ocular injury and motivate them to look for prompt hospital treatment in the event of ocular injury.

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