

Original Article

Demographic and clinical profile of agricultural ocular injuries in farmers

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During the period of harvesting of crops, accidental ocular injuries are common in farmers. It can be from superficial ocular injury to globe rupture. Superficial ocular injury, commonly corneal, if not treated properly can lead to permanent damage and blindness. Aims and objectives of this study were to find out Demographic and Clinical Profile of Agricultural Ocular Injuries among Farmers, and to increase awareness regarding uses of protective measures during farming and to prevent further injuries. This retrospective clinical audit was conducted in the Department of Ophthalmology of a government hospital of Eastern India. Farmers 20 years and above of age was admitted in the In Patients Department with ocular injuries related to farming. Data was collected from in patients register. Total 124 patient data was collected. Male (M) was more common than female (F), male and female ratio was 3.13. Most common age group was 31-40 years, which was 50% (62). Mean age of study population was 37.23 ± 8.16 yrs. Unilateral ocular injury was more common than closed globe injury. Most common mode of ocular injury was due to rice grain injury, 32.26% (40). Commonest diagnosis of hospital admission was corneal ulcer, 20.7% (25) followed by ruptured globe 10.4% (13). To minimize ocular injury during field work increased awareness regarding the use of protective measures is necessary. To reduce ocular morbidity after ocular injury awareness among the community for prompt contact with ophthalmic health care providers and hospitals is also additionally required.

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Key words : Farmer, demographic profile, ocular injury.

Ocular injury is common in farmers during agricultural work. It was seen that agriculture related ocular injury is most common among farmers in the developing world¹. Though few studies suggest that agricultural ocular injuries may be common, but in India, the prevalence of ocular injuries in agriculture workers is still unknown^{2,3}. Superficial corneal abrasion occurring in farmers during agriculture work is a major risk factor for microbial keratitis in India and other developing countries⁴. Fungal corneal ulcer is very difficult to diagnose and treat⁵. The risk of developing fungal corneal ulcer seems to be very high in agriculture workers, associated with a minor trauma of vegetative material. Regional variation of ocular injury is well known. This retrospective clinical audit was undertaken to find the causes of ocular injury in farmers in the adjacent region of Burdwan Medical College and Hospital, West Bengal, India.

AIMS AND OBJECTIVES

(1) Find out the demographic and Clinical Profile of Agricultural Ocular Injuries in Farmers.

(2) Increase awareness regarding uses of protective measures during farming and to prevent further injuries.

MATERIALS AND METHOD

This is a retrospective hospital based clinical audit. Case records of patients admitted with history of ocular injury during agriculture work, in the department of Ophthalmology, Burdwan Medical College and Hospital were reviewed for last 3 years, Jun 2015- May 2017. Patients aged 20 years and above were included in this study. As this is a retrospective clinical audit, so there are no risks of study subjects. The study was approved by the Institutional Ethical Board. The data was collected from the in patients record, this included patients demographic details, time interval between injury and admission, diagnosis at the time of admission, protective measures used or not during agriculture work. Demographic details of the patients are depicted in Table 1. Statistical analysis was performed using Microsoft office excel 2007. Normal distribution data are shown as mean values ± standard deviations.

RESULTS

Total 172 patients were admitted with agriculture related ocular diseases in between Jun 2015- May 2017, among them only 124 patients with complete follow up records were included in the study. Male (M) patients 94(75.81%)

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were more common than female (F) patients 30(24.19%), male and female ratio was (M:F) 3.13:1. Most common age group was 31-40 years, which was 50% (62). Mean age of the study patients were 37.23±8.16 years, of which youngest age was 20 years and oldest age was 70 years. Unilateral 95.97%(119) and closed globe 89.5%(111) ocular injury were common finding in this study. Mean time interval between injury and hospital admission were 57.49 ± 46.35 hours. Rice grain injury was the commonest mode of ocular injury, which was 32.26%(40), followed by vegetative material 24.2%(30). Corneal ulcer was the most common cause of hospital admission, which was, 38.71% (48) followed by Hypopyon corneal ulcer 21.77% (27), so corneal ulcer was enormous clinical diagnosis, about 60.48% (75) of study populations. Next to the corneal ulcer, traumatic hyphema, 11.29% (14) and ruptured globe 10.48%(13) were most common cause of hospital admission. 23(18.55%) patients gave history of using protective measures, while 101(81.45%) patients didn't use any protective measures.

Table 1 depicted demographic profile, Table 2 showing the age & sex distribution of study populations and Causal factors of ocular injury were depicted in Table 3, Table 4 showing extent of visual loss at presentation respectively. Pie diagram (Fig 1) used to shown clinical diagnosis.

DISCUSSION

Injury and work, both are interconnected. Agriculture associated eye injuries are not uncommon in farmers and some of which can be extremely sight threatening⁶. Agricultural trauma is an important cause of monocular blindness in rural India. The visual outcome depends upon the site and size of the injury and the extent of the ocular damage⁷. In this retrospective clinical audit, we found that male patients were admitted with ocular injury mostly

| Demographic profile | No (%) |
|--|-------------|
| Sex : | |
| Male | 94(75.81%) |
| Female | 30(24.19%) |
| Religion : | |
| Hindu | 45(36.29%) |
| Muslim | 64(51.61%) |
| Christian | 15(12.1%) |
| Laterality : | |
| Bilateral | 05(4.03%) |
| Unilateral | 119(95.97%) |
| Type of Injury : | |
| Open globe | 13(10.5%) |
| Closed globe | 111(89.5%) |
| Mean time between injury and admission : 57.49±46.35 in Hours. | |
| Mean age of study patients: 37.23±8.16 in years | |

compared to female. This result is corroborative with the findings from South Indian study by Srinivasan M *et al*⁸. We also recorded out, young adults, in their most productive lives were predominantly admitted with injury, so there is increased burden to the society. This burden can be reduced by improvement in basic farming technique and use of protective eye wear during agriculture work. Another major

| Age in years | Male | Female | Total (%) |
|--------------|------------|------------|------------|
| 20-30 | 22 | 8 | 30(24.2%) |
| 31-40 | 44 | 18 | 62(50%) |
| 41-50 | 20 | 2 | 22(17.74%) |
| ≥ 50 | 8 | 2 | 10(8.06%) |
| Total | 94(75.81%) | 30(24.19%) | 124(100%) |

Male & Female Ratio (M : F) = 3.13 : 1

| Objects | Open globe injury | Closed globe injury | Total(%) |
|---------------------|-------------------|---------------------|------------|
| Rice grain | 0 | 40 | 40(32.26%) |
| Vegetative material | 0 | 22 | 22(17.74%) |
| Animal | 4 | 26 | 30(24.2%) |
| Fish hook | 2 | 0 | 2(1.61%) |
| Chemical | 0 | 4 | 4(3.22%) |
| Stone | 1 | 3 | 4(3.23%) |
| Tree branch | 4 | 5 | 9(7.26%) |
| Wooden stick | 2 | 11 | 13(10.48%) |

| Visual acuity | No of cases at admission & (%) | No of cases at 2 month follow up & (%) |
|------------------|--------------------------------|--|
| Better than 6/60 | 70(56.45%) | 94(75.81%) |
| 6/60 to 2/60 | 41(33.06%) | 19(15.32%) |
| 1/60 to HM | 3(2.42%) | 2(1.61%) |
| PL+, PR+ | 4(3.23%) | 3(2.42%) |
| No PL | 6(4.84%) | 6(4.84%) |
| Total | 124(100%) | 124(100%) |

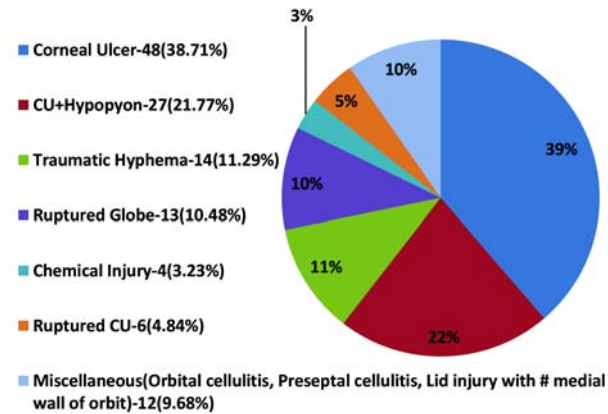


Fig 1 — Pie diagram showing Clinical diagnosis at the time of admission (n=124)

finding were delayed presentation to the hospital, this is most likely due to lack of education and awareness. Our findings correlates with another study from South India by Rajappa SA *et al*⁹, they reported that majority of ocular injury patients were young adults in their productive lives and had a delayed presentation after ocular injury. In a study, Clinical profile and visual outcome of ocular injuries

in a rural area of Western India by Misra S *et al*⁷, also reported that Ocular injuries were more commonly seen in adult patients and more commonly associated with agricultural work. As there is enormous variation in environment, in country like India there must be etiological difference in agricultural ocular injury. Rice grain and vegetable materials are accounted for the highest number of injuries in our study. Rice is a major crop grown in state of West Bengal in monsoon season, so farmers are commonly exposed to ocular injuries during harvesting. Animal tails are being one more common source of accidental ocular injury. During bathing and washing of cattle, farmers are being accidentally hit by cattle tail. In a study in North India by Goel R *et al*¹⁰ found that common cause of ocular injury was due to sugarcane leaves 36.7% and 25.5% (n=718) ocular injury was of animal matter corneal injury, but in our study rice grain 32.26% and animal 24.2% causes ocular injury. These important clinical finding signify geographical variation in Indian subcontinent. Corneal injury, even minor, is a predisposing factor for progression of corneal ulcer. In a study in South India by Gopinathan U *et al*¹¹, (n= 1353), 54.4% cases of fungal keratitis had history of trauma typically in agricultural work. We also audited out corneal ulcer (38.71%) was the major clinical diagnosis of hospital admission. Administration of prophylactic antimicrobial within 48 hours resulted in healing in corneal abrasion without sequel¹⁰, but in your study we found that mean time between injury and admission was 57.49±46.35 hours. It is probably due to lack of awareness, and a tendency to visit local quack and chemist for treatment and maximum patients did not use any protective measures while doing agriculture work, neither had any idea about those measures .

CONCLUSION

The regional information is important as the causative agent and pattern of ocular injury varies significantly from region to region with regard to facilities of empirical management. Prevention of injury itself by using protective goggles, eye shield and headgear during the agriculture work is cheaper and more feasible option.

Study Limitations :

The main limitation of our study is its retrospective clinical audit design. Because all cases were collected from a tertiary care hospital, there is a possibility of referral bias.

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