



AGRICULTURE RELATED CORNEAL INJURIES

Shrinkhal, Arvind Gautam² and Aarti Chaurasiya³

¹Junior Resident, Department of Ophthalmology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, shrinkhaalbhu@gmail.com, ²Junior Resident, Department of Shalaky Tantra, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, E-mail: arvind15aug@gmail.com and ³Junior Resident, Department of Shalya Tantra, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Corresponding Author: Shrinkhal

Abstract: The cornea is the crystal clear transparent tissue that covers the front of eye. It works with lens of eye to focus image on retina. Cornea can be damaged by number of factors like fingernail, tree branches, foreign bodies that are stuck under an eyelid. In condition of corneal trauma immediate action should be taken to prevent from injury like proper washing of eye with clean water, avoid rubbing of eye. After primary treatment the patient should be refer to higher center for further treatment without delay.

Keywords: Cornea, foreign body, chloramphenicol, Clotrimazole, Panophthalmitis

Introduction: Corneal trauma, even if trivial, is a predisposing factor for development of corneal ulcer. The conservative estimate of the number of corneal ulcers occurring annually in the developing world is around 1.5 million cases a year^[1]. Farmers are at risk for work related eye injuries. By the nature of their work profile men are more exposed to outdoor activities, thereby increasing their vulnerability to ocular trauma which is a major risk factor for keratitis. Sugar cane is a major crop grown throughout the year in Western Uttar Pradesh. The sugar cane leaves have sharp edges. Ocular injuries are likely to occur when the farmers tie the stems together while harvesting. The other common source of injury was the cattle tail/ear. Injuries occurred while milking and bathing them. While milking, the to and fro movement of the tail occurs due to the irritation caused by house flies and may accidentally hit the eye of the farmer. Leaves of wheat and other crops, fall of dust, insect, acid, iron dust, mango/ sheesham tree bark were the other causes of corneal trauma. Ignorance about the consequences of these injuries results in lack of prompt institution of adequate therapy leading to even a greater morbidity. So, some of the main causes of agriculture-related eye injuries include:

1. Accidental direct trauma with farm implements (e.g. cutlass, hoe, fishing hook, etc.)

2. Vegetable/plant/organic material hitting the eye, or spillage into the eye (cocoa pod, cornstalks, sticks/twigs, palm tree stalks, thorn, leaf, kernel, etc.)
 3. Sand spillage into eye
 4. Other foreign body (FB) in the eye
 5. Animal attack injury (e.g. cow horn injury, spitting cobra, insect sting)
 6. Assault injuries during communal conflicts involving crop farmers and cattle herdsman.
- The effects of injury to the eye include^[2]:

1. Embedded foreign body in the eye
2. Corneal abrasion
3. Traumatic cataract
4. Penetrating laceration resulting in lens injury, vitreous haemorrhage, or retinal tear/detachment
5. Microbial keratitis – fungal or bacterial
6. Panophthalmitis/ endophthalmitis, or sympathetic ophthalmitis—often requiring enucleation /evisceration.

Foreign bodies can either be found on the conjunctiva (bulbar and tarsal) or cornea (Figure 1), or may be intraocular. It is important to take a detailed history of the exact mechanism of injury and materials involved in order to know what type of injury to expect^[1,2].



Figure 1: Foreign body on cornea

It is important to determine the “regional” etiology within a given region for a comprehensive strategy for the diagnosis and treatment of corneal ulcer. Administration of prophylactic 1 % chloramphenicol and 1 % Clotrimazole by paid village health workers to patients with corneal abrasion who reported within 48 hours resulted in healing without complications in 98.5 % patients (Srinivasan, 2006). The “regional” information is important with regard to empirical management, as most of the eye clinics in the locality do not have microbiology facilities. However the cost factor, the non-availability of committed health care workers and effective antimicrobial agents are a major constraint in drug prophylaxis. Prevention of injury itself, using protective goggles/head gear in the population at risk is a cheaper and more feasible option.

Infections of cornea due to filamentous fungi are a frequent cause of corneal damage in developing countries and can lead to corneal ulcers (Figure 2) and perforation and are difficult to treat. Microscopy is an essential tool in the diagnosis of these infections.



Figure 2: Corneal ulcer

Poor prognostic factors for agriculture-related eye injuries are:

1. Nature of injury: worse prognosis if due to vegetative material and exacerbated by inappropriate use of traditional eye medication or steroid eye drops.
2. Severity of injury: worse if it is a penetrating injury or an injury to multiple ocular structures
3. Late presentation at a health care facility
4. Evidence of infection at the time of presentation
5. Difficulty in management and inadequate treatment options for eye injuries in health care facilities, e.g. lack of required products such as bandage contact lens, visco-elastic and fine nylon sutures; and the lack of support services for therapeutic keratoplasty, corneal repair within 24 hours and vitreo-retinal surgical facilities.

Prevention and Management: A large sector of the population is at risk of monocular blindness from agriculture related eye injuries, so there is a need for prevention. However, there is very little evidence (from research in this area) to guide and develop appropriate messages or policy^[3,4].

Some possible measures include:

1. Raising public awareness and health education through television or radio programmes on eye safety or by giving health education talks in hospital/clinic waiting rooms.
2. Encouraging the use of protective eyewear by those at risk and making such eyewear available and affordable.
3. Establishing a national or state-based ocular injuries register to record incidence by type, cause and pattern of injury. This could be used to inform appropriate public policy and legislation on eye safety.
4. Working with hospitals to develop policies that will allow management of eye injuries on an emergency basis. Departments can collaborate and work out a payment schedule so that treatment/surgery can be initiated without having to wait for payment of fees by patients.
5. Lobbying government or insurance companies directly, for health insurance to cover the treatment of eye injuries.
6. Demarcating dedicated areas of free-grazing for livestock/ cattle-rearing which are separate from areas of crop farming. This will help to prevent communal clashes between farmers. This is being implemented in some communities at present.

7. Complete microbiological work-up of all ulcers, followed by initial therapy based on the smear results.

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