Corneal Abrasions and Corneal Foreign Bodies

Faheem Ahmed, MD[a], Robert James House, BA[b], Brad Hal Feldman, MD[c,*]

KEYWORDS

• Corneal abrasion • Corneal foreign body • Management • Treatment

KEY POINTS

- Corneal abrasions and corneal foreign bodies have an incidence of approximately 3 and 2 per 1000 persons and represent a significant portion of ocular-related presentations to the emergency room.
- As many as one-quarter of all ocular injuries occur at the workplace and young males demonstrate the highest rates of occupational eye injuries.
- Both corneal abrasions and foreign bodies can have potentially sight-threatening consequences if not diagnosed and treated properly.
- A detailed history and thorough physical examination should be taken to rule out globe rupture or the presence of an intraocular foreign body.
- Referral to an ophthalmologist is recommended if the patient has signs and symptoms of a penetrating eye injury, corneal ulcer, recurrent erosion syndrome, a sight-threatening infection, or if the symptoms fail to improve after initial treatment.

INTRODUCTION

Corneal abrasions result from nonpenetrating defects to the epithelium of the cornea and account for a large percentage of ocular injuries seen by primary care physicians.[1,2] Patients can present with a foreign body sensation, severe pain, and sensitivity to light (photophobia), acute enough to require time away from work.[3] Although many cornea abrasions heal without treatment, serious complications can arise resulting in long-term damage and vision loss. Contact lens wear can cause mechanical injury to the cornea, as well as increased risk from virulent microbial pathogens.[4] Owing to the multitude of possible causes for corneal abrasions, it is important for primary care providers (PCPs) and emergency room (ER) physicians to understand the pathophysiology and etiology of a traumatic corneal injury. The role of the PCP

[a] Wills Eye Hospital, 840 Walnut Street, Philadelphia, PA 19107, USA; [b] San Juan Bautista School of Medicine, Caguas, PR 00727, USA; [c] Cornea Service, Wills Eye Hospital, 840 Walnut Street, Philadelphia, PA 19107, USA
* Corresponding author.
E-mail address: bradhfeldman@gmail.com

Prim Care Clin Office Pract 42 (2015) 363–375
http://dx.doi.org/10.1016/j.pop.2015.05.004 primarycare.theclinics.com
0095-4543/15/$ – see front matter

or ER physician is to perform a detailed clinical history and comprehensive evaluation of the patient to initiate an appropriate intervention and determine if referral to an ophthalmologist is necessary.

EPIDEMIOLOGY

Frequency

Corneal abrasions and corneal foreign bodies are common and often preventable ocular injuries with an incidence of approximately 3 and 2 per 1000 persons, respectively, in the United States.[5] Eye-related diagnoses represent approximately 8% of total ER visits.[2] Of those eye-related occurrences, approximately 45% are corneal abrasions, followed by 31% from foreign bodies.[6] When researchers looked at patients presenting to an ophthalmic ER with a chief complaint of ocular foreign body sensation, 67.8% had a true corneal foreign body and 13.6% had a corneal abrasion.[7]

Work-Related Incidence and At-risk Populations

In a United Kingdom study of ER patients, 64% of patients diagnosed with a corneal abrasion had suffered direct minor trauma.[8] One of the most common causes of minor trauma in the pediatric and adult populations is chronic contact lens wear. According to Aslam and colleagues,[8] 12% of corneal abrasion cases were contact lens related. In a 6-month study conducted by Lee and colleagues,[9] 87% of patients who had contact lens–related trauma presented with epithelial staining, corneal abrasion, or epithelial defect (**Box 1**).

Some studies have reported that occupational eye injuries are responsible for at least one-quarter of all eye injuries, whereas other studies have demonstrated an even greater amount.[10] According to the 2008 Bureau of Labor Statistics[3] analysis of workplace injuries, occupational eye injuries account for 62% of facial injuries that lead to at least 1 day away from work. In this study, the sources of eye injury for almost one-half of all cases came from the category of scrap, waste, and debris.[3] The 3 primary manifestations of eye injuries from greatest to least were foreign bodies (34.2%), abrasions/scratches (14.9%), and chemical burns (10.4%).[3] The occurrence of ocular injuries in major industrial occupations were most common in construction and manufacturing jobs, which were responsible for 45% of all work-related eye injuries. The median number of days off from work with eye injuries was 2, with 44% of cases only involving a single day, and this compared favorably with the median of 8 days for all cases of work injury. These statistics demonstrate that, although corneal abrasions are relatively common, recovery time is much shorter than many other frequent work-related injuries.

Box 1
Risk factors for corneal abrasions

- History of trauma (eg, direct blunt trauma, chemical burn, or radiation exposure)
- Contact lens wear
- Male gender
- Age between 20 and 34 years old
- Construction or manufacturing job
- Lack of eye protection