

Answer to Ophthalmproblem *continued from page 775*

3. Corneal foreign body

Corneal foreign bodies (FBs) are common presentations to primary care physicians. Typical symptoms include FB sensation, mild to severe ocular pain, tearing, photophobia, and possibly decreased visual acuity. Typical findings include a visible FB, conjunctival injection, eyelid edema, and superficial punctate keratopathy. With a careful history and slit lamp examination, most corneal FBs can be initially managed by primary care physicians.

Management

Eliciting an accurate history in patients suspected of having a corneal FB is imperative. Apart from ocular symptoms, important details to document include the mechanism or circumstance of injury, the use of eye protection, past ocular history, and tetanus immunization status. A history suggesting high-velocity projectiles, such as metal-on-metal contact (especially without the use of eye protection), should increase suspicion of an intraocular FB.

The first step in examining a patient with a history of FBs is documenting accurate visual acuity. Other useful tests include extraocular movements, confrontation visual fields, and pupillary responses. Examination of the eye itself is best performed with a slit lamp. If a slit lamp is not available, many corneal FBs might still be identified with close inspection using a penlight. Application of a topical anesthetic can provide pain relief and aid examination. However, it must be stressed that under no circumstances should a patient be discharged with topical anesthetics, as this impairs healing and can mask more serious problems. Additionally, there should be no pressure placed on the eye during the examination and no measurement of intraocular pressure if globe penetration is suspected.

Using the slit lamp, the entire cornea should be examined for the presence of 1 or more FBs (some superficial FBs might become dislodged, leaving only a corneal abrasion). Details to document about FBs include location, depth, material, and appearance of the surrounding cornea. Findings might include rust rings, which are commonly found with metallic FBs, or, more concerning, a white infiltrate, which might suggest infection. The anterior chamber should be examined for cells or flare, both markers of ocular inflammation and also suggestive of an infectious process. This is done by focusing a short, thin beam of high-intensity light on the anterior chamber from an angle of approximately 45°, with high magnification in a dark room. Using the black pupil as a background, the examiner looks for either cells (which appear as bright mobile specks) or flare (the light beam appears gray against the black pupil) within the anterior chamber. Normally, there should be no cells or flare.


Fluorescein staining of the cornea should be performed to identify associated corneal abrasion. Vertically oriented abrasions suggest FBs under the lids, which would

warrant lid exploration (including everting the upper eyelid). Fluorescein can also be used to detect perforation of the cornea with the Seidel test. After application of topical anesthetic, a fluorescein strip is used to flood the area with fluorescein. The cornea is immediately examined under the slit lamp with a cobalt-blue light. A positive Seidel result is seen when clear aqueous fluid leaks from the anterior chamber and dilutes the surrounding fluorescein.¹

During the history and examination, the examiner should be looking for clues to suggest an intraocular FB, which would warrant urgent ophthalmological referral. Signs of intraocular FB include decreased visual acuity, positive Seidel test results, a shallow or flat anterior chamber, marked anterior chamber inflammation, pupillary distortion, an iris transillumination defect (seen with retroillumination), traumatic cataract, or a shadow seen on direct ophthalmoscopy of the fundus. If an intraocular FB is suspected, orbital imaging should be performed (avoid magnetic resonance imaging if there is a possibility of an intraocular FB), and urgent referral to an ophthalmologist should be arranged for confirmed or suspected cases.

In cases of simple, uncomplicated corneal FBs, primary care physicians who are experienced and comfortable with removal of the material can attempt to do so. First, the cornea is anesthetized with an agent such as proparacaine hydrochloride 0.5%. The patient is then positioned so that his or her head is firmly placed against the headrest of the slit lamp. Proper positioning prevents forward movement of the patient during removal. If the FB is superficial, a wet cotton-tip applicator used with a rolling motion is often sufficient for removal. If the FB is lodged at more depth, a 25-gauge needle can be used to “flick” the FB off of the cornea. Metallic FBs might leave behind surrounding rust rings, which can be removed with a burr brush by an ophthalmologist at a later time. All cases of corneal FBs, even if the FBs were successfully removed, should be followed up with an ophthalmologist. Patients should be prescribed an antibiotic drop to protect against infection (as for corneal abrasions) and, if needed, a cycloplegic agent to relieve pain and photophobia (eg, homatropine 2% twice daily). Prognosis is generally excellent unless there is an associated infection, the FB is in the visual axis, or there is an intraocular FB.

Recommendations

Corneal FBs are often easily diagnosed based on history and examination. Primary care physicians should search for signs or clues of a history of intraocular FBs, which would warrant urgent ophthalmological assessment. For uncomplicated cases of corneal FBs, experienced physicians can attempt removal of the material; however, all patients should eventually be seen by an ophthalmologist. 

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Competing interests
None declared

Reference

1. Romanchuk KG. Seidel's test using 10% fluorescein. *Can J Ophthalmol* 1979;14(4):253-6.