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UPDATE IN OFFICE MANAGEMENT

Management of the Red Eye for the Primary Care Physician

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ABSTRACT

For the primary care physician, the occurrence of a red eye is a frequent and prominent finding of a disease process in patients. A careful history and simple examination with the observation of typical clinical signs are important for the management of this common disorder. The causes can be classified as painful red eye, trauma, and other common conditions. The most frequent causes of a red eye, such as dry eye, conjunctivitis, keratitis, iritis, acute glaucoma, subconjunctival hematoma, foreign bodies, corneal abrasion, and blunt or penetrating trauma, are described in this article. Simple diagnostic methods and an emergency management with some useful topical ophthalmic preparations are included. Although several conditions can be treated by the primary care physician the clinical signs that require an urgent ophthalmic consultation are chemical burns, intraocular infections, globe ruptures or perforations, and acute glaucoma.

KEYWORDS: Red eye; Primary care; Emergency; Management; Ophthalmology

A red eye usually mirrors the possible reactions of the eye to exogenous or endogenous irritations and trauma, and gives indications of possible systemic and ocular diseases. The primary aim of the management of this common disorder should be the differentiation of the symptom of red eye and the assessment of the underlying disease.

The causes of a red eye can be numerous and can occur as an ophthalmic emergency within minutes or hours but also as a chronic disease over weeks or months. In general, redness of the eye can be caused by hyperemia with dilation of the conjunctival, episcleral, or scleral vessels (trauma, chemical burns, immunologic reactions); inflammatory reactions from infections (bacterial, viral, fungal); or chronic reactions of the external eye from systemic causes (Sjörgen's syndrome).

Most causes of eye redness can be recognized by taking a careful history and performing simple examinations with the following main questions:

- Association with pain
- History of preceding trauma
- Seasonal or recurrent occurrence (allergic reactions, iritis)
- Changes in the eye lid (contact dermatitis, ocular rosacea, pemphigoid)
- Use of eye drops (glaucoma, dry eye)

The assessment of clinical signs should include the anatomic location of redness (eyelids, conjunctiva, cornea, sclera and episclera, or intraocular); symptoms in one or both eyes; possible associated symptoms (pain, itching, visual decrease or loss); and further prominent ocular (mucopurulent discharge, watering, blepharospasm, lagophthalmus) or systemic (fever, nausea) findings.

In particular, the occurrence of ocular pain is an important indicator. Pain can have several sources, originating from the eye itself or the periocular region. Painful symptoms can be projected to the eye from other regions. Typical causes are changes of the eyelids, ocular muscles, cornea, sclera, uvea, or optical nerve. Frequent pain-associated syndromes are migraine, cluster headache, arteriitis temporalis (M. Horton), and zoster or trigeminus neuralgia.

The most frequent causes of a red eye (Table 1) are described here with simple diagnostic methods. Emergency

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management with some useful topical ophthalmic preparations are included (Table 2). The causes are grouped as painful red eye, trauma, and other common conditions.

PAINFUL RED EYE

Conjunctivitis

The causes to consider in patients with suspected acute conjunctivitis are allergic; bacterial (staphylococci, pneumococci, gonococci, haemophilus); viral (adenovirus, herpes viruses); and chlamydial. The most prominent signs are generalized conjunctival injection with gritty discomfort, mild photophobia, and variable discharge but no loss of visual acuity.

Allergic conjunctivitis usually presents with itching tearing, large cobblestone papillae under the upper lid, and conjunctival swelling (chemosis), which may assume alarming proportions. It usually responds rapidly to topical antihistamines and vasoconstrictors. Steroid eye drops also might be indicated but must be prescribed by an ophthalmologist. Secondary bacterial infection should be prevented with antibiotic eye drops.

The leading symptoms of bacterial conjunctivitis are conjunctival redness and mucopurulent discharge, which requires frequent antibiotic drops (as often as hourly in severe cases) and ointment at night. Clean away the discharge with moist cotton balls and refer the patient to an ophthalmologist if the infection does not settle. However, swabs for further bacterial diagnostics are rarely needed.

Viral conjunctivitis (epidemic keratoconjunctivitis) caused by adenovirus (type 8) presents with marked discomfort and is highly contagious with rapid person-to-person spread unless scrupulous care is taken with hand washing. Watery discharge, often bilateral, and swollen preauricular and submandibular lymph nodes (lymphadenitis) confirm the viral infection. Give antibiotic drops to prevent secondary bacterial infection and treat with artificial tears. Refer the patient to an ophthalmologist to monitor for the development of keratitis, which can develop after 1 week. The symptoms usually are relieved within 2 weeks.

A special case is herpes zoster conjunctivitis. The onset is similar but is presumed to originate in the nerve root. Therefore, it typically presents as uniocular involvement with a dermatitis similar to shingles in the distribution of the trigeminal nerve. This presents as a vesicular rash over the distribution of the ophthalmic division of the trigeminal cranial nerve. Pain and tingling often precede the rash. The patient is usually unwell and in pain. The eye may be affected, resulting in blepharitis, conjunctivitis, keratitis, uveitis, secondary glaucoma, ophthalmoplegia, or optic neuritis. The cornea (keratitis) is involved in particular when the tip of the nose is involved (Hutchinson sign), because both regions are supplied by the nasociliary nerve. The associated keratitis with inflammation and disruption of the cornea or anterior uveitis (inflammation of the anterior segment of the eye) can lead to

CLINICAL SIGNIFICANCE

- Red eye symptoms are common.
- Most causes can be well managed with topical therapy, such as eye drops.
- The most serious causes are associated with pain or trauma.
- Chemical burns and penetrating injuries to the eye should be immediately referred to an ophthalmologist.

Table 1 Causes and Differential Diagnosis of the Red Eye

- **Painful red eye**
  - Conjunctivitis
  - Episcleritis and scleritis
  - Keratitis and corneal ulcer
  - Iritis and intraocular infections (endophthalmitis)
  - Glaucoma (acute and chronic)
- **Traumatic conditions**
  - Subconjunctival hematoma (hyposphagma)
  - Corneal and conjunctival foreign body
  - Corneal abrasion
  - Corneal flash burn
  - Chemical burns
  - Blunt or penetrating trauma to the eye
- **Other common conditions**
  - Dry eye
  - Blepharitis

Table 2 Useful Topical Ophthalmic Preparations and Eye Patching

- Antibiotic eye drops or ointment, eg, 0.5% chloramphenicol, gentamicin, erythromycin, or ofloxacin. Usually first use a broad-spectrum antibiotic with an application four times per day to the lower conjunctival sac. Ointments are preferably used at night.
- Local anesthetic, eg, proparacaine. Do not use over longer periods because of corneal toxicity.
- Fluorescein corneal stain.
- Mydriatics, eg, tropicamide (short acting). Do not use in patients with suspected acute glaucoma to avoid precipitating effects.
- Miotics, eg, 1% or 2% pilocarpine.
- Steroid preparations should generally not be used without an ophthalmic consultation because of possible aggravation of inflammation or induction of glaucoma. However, a combined preparation of antibiotics and steroids is often useful.
- Eye patch: double-patch technique is common to immobilize lid margin to minimize pain and recurrent irritation of large abrasions.
- Eye shield: used to prevent pressure or contact to the eye when a globe rupture is suspected.