

The Red Eye: A Systematic Approach



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The red eye is the most common ocular condition the primary care practitioner faces.¹ Its diagnosis can be very challenging. Disorders of almost every ocular structure, as well as a variety of systemic conditions can result in an inflamed eye. Some of these will be benign, but others are potentially vision- or life-threatening. Different sources have outlined the causes of the red eye.¹⁻⁵ The aim of this article is to develop a systematic approach to the red eye, in order to enable the primary care practitioner to identify which patients they will treat themselves and which patients will be referred for further assessment and management.

History

As with any other patient complaint, it is necessary to look at the appropriate history. Table 1 summarizes aspects of the history that will help guide you to the proper diagnosis of the red eye.

Physical examination

Unlike the history, the ophthalmic physical examination (Table 2) is approached differently than examinations of other organ systems. The ocular exam does not lend itself well to the traditional inspection, palpation, percussion and auscultation (IPPA).

Sally's case

Sally, 25, presents with a 3-day history of red eyes. It began with her left eye and progressed to her right eye. There has been mild discomfort, watery discharge but no itchiness. She has had a sore throat for the last week.

History

Her history is negative for contact lens wear and previous episodes. She is otherwise healthy.

Examination

Visual acuity is 20/20 in each eye, visual fields and extraocular movements were full. Anterior segment examination revealed diffuse conjunctival redness, clear cornea and watery discharge. Her pupils were normal and there was no firmness to either eye on palpation.

Diagnosis

Sally was diagnosed with viral conjunctivitis.

Management

She was prescribed cool compresses and was advised of infectious precautions.

For more on Sally, look to page 71.

Visual acuity, taken one eye at a time with the patient's glasses on, is an essential part of the ophthalmic examination. It should be assessed before bright lights are shone in the patient's eyes. Any decrease from the patient's

baseline vision, not correctable by pinhole (indicates the need for a new glasses prescription), should trigger concern of the possibility of a more serious cause of a red eye. Visual fields by confrontation and extraocular movements should be full.

Next, a penlight and/or slit lamp should be used to illuminate periocular (face, lids and lashes) and anterior segment (conjunctiva, cornea and anterior chamber) structures. Any abnormalities should be noted. The penlight should also be used to examine the pupils, looking for size discrepancy and abnormality in response to the light. Fluorescein, when used with a cobalt blue light (attachments are available for penlights), can be helpful to identify any abnormalities of the corneal epithelium (abrasions, dendrite, punctate staining). Palpation of the globe (in non-traumatized eyes) can be helpful to determine if the intraocular pressure of the affected eye is elevated. Eyes with acute angle closure glaucoma feel firm, especially as compared to the unaffected fellow eye.

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Sally's resolution

Sally returns 1 week later. The redness is better but her vision is blurry and she has some sensitivity to light.

Examination

Visual acuity is 20/30 in the right eye and 20/40 in the left eye. The redness is improved. Nothing else is noted on examination.

Management

Sally is referred for an ophthalmic evaluation because of the reduced visual acuity.

Referral conclusion

Sally had a viral (adenoviral) conjunctivitis. She had developed a potential late manifestation of corneal subepithelial infiltrates that were causing her decreased vision.

Table 1

Important points in history

History of present illness:

- History of trauma or foreign body
- Course, duration, pain, photophobia, associated decreased vision
- Recent contact with red eye or upper respiratory tract infection

Past ocular history:

- Contact lens wear
- Recent surgery:
- Previous episodes and diagnosis

Past medical history:

- Allergies/hay fever

Medications:

- Eye drops



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Table 2

Important points on ocular exam (with worrisome features)

- Visual acuity (decreased)
- Visual fields by confrontation (reduced compared to examiners)
- Extraocular movements (reduced motility in 1 or all directions)
- External and anterior segment exam reviewing the ocular and surrounding structures by penlight or slit lamp (pattern of redness, opacity on cornea, hypopyon)
- Pupils (abnormal size or reaction)
- Fluorescein with cobalt blue light (abrasion, dendritic, or punctate staining of cornea)
- Intraocular pressure by palpation—not to be done if possible globe rupture (firmness)

Differential diagnosis and referral

Once the history has been obtained and the eyes examined, decisions about possible diagnosis (Table 3) and management can be entertained. Based on the history, patients with significant trauma, the possibility of foreign body, contact lens wearers, recent ocular surgery and those who have severe pain and photophobia should be referred urgently for a thorough assessment by an ophthalmologist.⁵ Abnormalities on examination that could herald a vision threatening diagnosis include:

- decreased vision,
- decreased visual field,
- loss of extraocular movement,
- severe and/or sectoral redness,
- white corneal opacity or cloudiness,
- hypopyon,

- fluorescein staining, or
- increased intraocular pressure.

Any of these findings should prompt an urgent referral to an ophthalmologist.⁵

Differential diagnosis and management

The diagnosis is likely benign if the vision remains 20/20 and there is:

- minimal-to-no discharge,
- mild-to-moderate diffuse conjunctival redness,
- mild crusting of the lids and lashes,
- itchiness, or
- recent exposure to someone with a red eye and/or a recent upper respiratory infection.

In this case, possible diagnoses include conjunctivitis (allergic, viral, bacterial), blepharitis, or dry eye.⁵

For patients with probable viral conjunctivitis, treatment is supportive (cold compresses and infectious precautions). Patients with watery discharge, significant itchiness and a history of allergies are more likely to have an allergic conjunctivitis. These patients often respond to cool compresses and a topical antihistamine/mast cell stabilizer (ketotifen fumarate or olopatadine). For cases presumed to be bacterial conjunctivitis, a course of topical antibiotics can be prescribed. Fucithalamic[®] has very good gram-positive coverage, while Polytrim[®] and Polysporin[®] have better broad-spectrum coverage. Patients with blepharitis and dry eyes should be advised to use warm compresses and artificial tears. Should any of these presumed conditions fail to respond to the prescribed

Take-home message

At each visit, an appropriate ophthalmic history and examination will guide the clinician in their decision to treat or to refer.

Table 3

Relevant anatomy and possible diagnosis (with possible findings on history and examination)

Lids and surrounding tissues:

- Preseptal or orbital cellulitis (pain, swelling of lids, decreased motility)
- Blepharitis (debris on lashes, styes)
- Eyelid malpositions

Conjunctiva:

- Conjunctivitis: Allergic, viral, bacterial (normal vision, itching, watery or purulent discharge)
- Subconjunctival hemorrhage
- Pterygium

Episcleritis/scleritis (severe redness and pain)

Cornea:

- Infectious cornea ulcer (pain and opacity on cornea)
- Herpes simplex keratitis (dendritic fluorescein staining)
- Corneal abrasion (pain and large area of fluorescein staining)
- Dry eyes (irritation and punctate fluorescein staining)

Anterior chamber:

- Iritis (cells in anterior chamber with slit lamp)
- Acute angle closure glaucoma (pain, nausea, cloudy cornea, fixed mid-dilated pupil, cloudy cornea)
- Endophthalmitis (recent ocular surgery, pain, hypopyon)

treatment within one week, the patient should be referred to an ophthalmologist.⁵

Conclusion

In summary, there are many potential causes for a red eye. Obtaining an accurate history and performing a proper physical exam will assist you in deciding whether to treat the patient or to refer them for further assessment and care. Parameters that should trigger a referral include signs and symptoms that herald a worrisome diagnosis:

- significant trauma or contact lens wear,
- any abnormality on examination other than redness of the conjunctiva and
- any condition that is not resolving after five to seven days of management. 

References:

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