

The Pediatric Red Eye

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KEYWORDS

• Conjunctivitis • Red eye • Uveitis • Contact lens • Corneal abrasion

KEY POINTS

- If you have a visceral reaction when a child presents to your office with a red eye, take heart, because ophthalmologists do not like the chief complaint of “red eye” any more than you do.
- The red eye differential is broad, and if you do not treat or refer it correctly, it may walk back into your office days later with a vision-threatening problem.
- Many of the common causes of red eye are benign, but there are some dangerous diseases that should be recognized and referred.
- A thorough history is critical. Key questions include the onset, duration, unilateral versus bilateral, exposure to sick contacts, painful or itchy, discharge, and vision change.
- Refer if there is a significant change in vision, or severe photophobia and discomfort.

ETIOLOGY AND CONTRIBUTORY OR RISK FACTORS

The red eye is complex because it is a nonspecific sign. A red eye may involve the conjunctiva; episclera; sclera; cornea; eyelid; nasolacrimal drainage system; or an internal ocular structure, such as the retina or uveal tract. The cause may be trauma, inflammation, infection, foreign body, or structural, and the cause may be localized to the eye or there may be an underlying systemic disorder.¹⁻³

The important thing to remember is that conjunctivitis may lead to blindness. A single episode of severe conjunctivitis can cause corneal scarring that could affect vision, or lead to conjunctival changes that become a chronic degenerative problem.¹⁻⁴

TOOLS TO EVALUATE THE RED EYE

The pediatrician has the essential tools readily available to assess a red eye and determine a treatment path, or make the decision to refer. An essential first step is to put on examining gloves to prevent an epidemic of viral conjunctivitis. Checking the vision should be done immediately, because when there is decreased vision, regardless of

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the other physical findings, it is imperative to refer. There might be posterior involvement of the retina or choroid that is causing the eye to be red from inflammation. A dilated examination is necessary to make the diagnosis.

A penlight or direct ophthalmoscope aids in assessing the pupils, looking for corneal clarity, and observing the pattern of redness on the conjunctiva and/or sclera. Intense redness at the limbus, referred to as ciliary flush, is often more concerning than mild general redness because it usually signifies problems on the cornea or inside the eye. The eyelids should be lifted and pulled back to get a view of the entire bulbar conjunctiva (the conjunctiva overlying the sclera) and the tarsal conjunctiva (the conjunctiva overlying the inside surfaces of the eyelids). Using a blue filter after instilling a drop of topical anesthetic followed by a drop of fluorescein-stained saline, it is easy to determine if there is a defect in the corneal surface epithelium. This can happen from trauma or from infections, such as pseudomonas and herpes. Motility should be evaluated also because an orbital process might cause limitation of movement and pain with movement.

Culture swabs need to be available if there is a large amount of discharge, especially if there is concern for gonorrhea or chlamydia. Cultures of the cornea need to be done at the slit lamp with special instruments. If there is a history of trauma and there is a chance the eye has been penetrated, a protective shield should be placed and the child sent to the emergency room.

HISTORY

The history is very important when trying to determine the cause of a red eye. The first question should be to ask if there has been any associated trauma. It is important to know so that you can be suspicious for a penetrating injury. Be aware, children are not always forthcoming with an accurate history if they think their actions will get them in trouble.

Next you should determine the onset and duration and whether it is unilateral or bilateral. It is helpful to know whether it started simultaneously in both eyes, or the onset of the second eye occurred after several days. This points to viral conjunctivitis.

It is important to check the vision, but you also need to ask if there have been vision changes. Sometimes the visual acuity can be normal, but there are qualitative changes, such as a visual field cut.

Next, one should explore for associated symptoms, such as photophobia, pain, itching, and swelling. It is important to ask about contact lens wear, and whether the contact is still in the eye. Knowing that the rest of the family also has conjunctivitis helps to reassure that the redness is viral, and observation is appropriate.

Red eyes can be associated with many systemic illnesses (discussed later) (**Box 1**). That is why a complete review of systems is necessary at times to uncover the cause of the red eye. Often the child presents with various symptoms before the onset of red eyes. The red eye often helps solve the diagnostic dilemma.

THE RED EYE CAUSES AND TREATMENTS

The causes of red eye can be grouped by etiology. The major categories include infectious (viral and bacterial), inflammatory, traumatic, structural, toxic and chemical, related to external disease, and foreign body including contact lenses.

Viral Conjunctivitis

One can spot a child with viral conjunctivitis in the waiting room; after rubbing their red, glassy eyes and runny nose, they happily touch every toy, magazine, and surface

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