Red Alert: Common Causes of an Emergent Red Eye

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Red-eye is going to be one of the most commonly encountered chief complaints among emergency visits to an optometry or ophthalmology practice. It is typically caused by inflammation that stems from almost any part of the eye itself and/or its immediate surroundings. It is important to understand the causes of an acute red eye as it will not only help with determining the timeline with which that patient needs to be seen but also how they are managed once in the office. This article will discuss the major causes of an acute red eye and how they should be managed.

Conjunctivitis

Conjunctivitis, or pink eye, is the most common cause of a red eye. The conjunctiva is a thin, clear membrane that overlies the white of the eye (sclera) and the inner surface of the eyelids. Its main purpose is to protect the eye from infection and foreign objects. When this tissue becomes inflamed, increased blood flow gives the eye a red, bloodshot appearance. There are three main types of conjunctivitis: allergic, bacterial and viral.

Allergic

Allergens that affect the eye can be seasonal (airborne pollens and other environmental factors) or perennial (animal dander, dust mites, etc). Symptoms of allergic conjunctivitis include itching, redness, tearing and ropy discharge. Examination of these patients will show injection (redness), chemosis (swelling of the conjunctiva) and large bumps under the eyelid known as papillae. Treating allergic conjunctivitis consists of avoiding exposure of the allergen, artificial tears and topical therapy with antihistamine/mast cell stabilizer drops. More advanced cases may need topical steroid therapy.

Bacterial

Bacterial conjunctivitis is highly contagious and spread through direct contact with contaminated fingers. The severity of the infection depends on the type of bacteria that has infiltrated the tissue. Most commonly, patients will experience a red eye with foreign

body sensation, blurred vision, mild to moderate mucous discharge and eyes may be stuck shut upon awakening. Examination of these patients will show swelling of the eyelids, injection, mild irritation to the cornea, yellow/green mucous discharge, and crusting of the eyelids/eyelashes. Treatment of these patients includes education regarding good hygiene to prevent the spread to others and a course of a topical antibiotic drop. These patients will need to have limited exposure to only pertinent areas of the office and everything must be thoroughly disinfected after their departure to prevent the possible spread of infection to staff and other patients.

Viral

Viral conjunctivitis may be caused by upper respiratory infections, herpes simplex/zoster virus, or a more contagious virus such as the adenovirus and is usually spread through direct contact with any number of sources. Patients typically present with diffuse redness, gritty sensation, watery discharge, and occasionally light sensitivity. The examination can reveal diffuse injection, lymphoid follicles, or bumps, under the lower eyelids, and swelling of the preauricular lymph node located just in front of the ear. Viral conjunctivitis is typically self-limiting and resolves by itself within two weeks. Treatments to help with symptoms include cold compresses and artificial tears. Topical steroids may be used in more advanced cases. These patients also need to be educated in good hygiene to help prevent the spread of infection and all equipment must be thoroughly disinfected.

Dry Eye

Dry eye is a very common condition seen in everyday practice caused either by low tear production or poor quality of tear film causing early evaporation of the tears. Low tear production can be caused by a number of things ranging from inflammatory conditions of the body to many types of medications. Dry eye patients may present with any of the following complaints: redness, irritation, gritty sensation, burning, intermittent blurring of vision and watering. During the exam, you may notice some injection, low volume of the tear film, and small focal areas of staining on the cornea when examining with fluorescein dye. There are a variety of treatments for alleviating signs and symptoms of dry eye. A more conservative approach will start with warm, wet compresses to the eyes/lids, frequent use of artificial tears, lubricating ointment for night-time use and Omega-3 fatty acid supplementation. Prescription drops help alleviate the underlying inflammation of the

eye to help promote increased tear production. One of the newest prescription medications helps alleviate signs and symptoms of dry eye. More invasive treatment of dry eye include temporarily, or sometimes permanently, blocking the opening of the puncta (drains in the eyelids) allowing for more tears to remain on the surface of the eye.

Blepharitis

Blepharitis. www.optometricmanagement.com/issues/2009/may-2009/rid-the-lid-of-blepharitis

Blepharitis is a chronic inflammation of the eyelids caused by congestion of the Meibomian glands (creates the oily layer of tear film to help prevent evaporation) within the lids themselves and the natural bacteria that live on the skin. Blepharitis has many of the symptoms of dry eye with the addition of irritation that is worse upon awakening and crusting of the eyelids. Examination of these patients can show injection, swelling of the eyelids, dandruff-like material at the base of eyelashes, and clogging/capping-over of the Meibomian gland openings. Treatment of mild cases, similar to dry eye, consists of warm, wet compresses and artificial tears. Baby shampoo or eye scrub solutions may be used daily in order to prevent the buildup of material along the eyelid margins. More advanced cases of blepharitis may need topical antibiotic/steroid ointments to alieve the inflammation and severe cases may require treatment with oral antibiotics.

Corneal Abrasion/Foreign Body

A corneal abrasion is caused by an outside source that creates a scratch to the surface of the cornea. It may be caused by a single incident of contact with the eye or by a foreign body that remains on the eye or under the eyelid. Patients will usually present with

redness, pain, light sensitivity, watering, and foreign body sensation. The examination may show a retained foreign body and irregularity to the corneal surface. Any abrasions will light up with the use of fluorescein dye. Treatment of these patients includes removing any remaining foreign body, antibiotic drops/ointment and potentially the use of a bandage contact lens depending on the size of the abrasion.

Subconjunctival Hemorrhage

Subconjunctival hemorrhages appear as an area of bleeding on the white of the eye. A subconjunctival hemorrhage occurs when the small blood vessels within the conjunctiva break, releasing blood underneath the tissue. There are several situations that can lead to the breaking of these blood vessels; including high blood pressure, severe coughing, straining, trauma, use of blood thinners and bleeding disorders. These hemorrhages are typically asymptomatic but can sometimes present with irritation or foreign body sensation. Treatment of these hemorrhages usually consists of educating the patient that they will resolve on their own within a few weeks. If someone is symptomatic with mild irritation, they may use artificial tears or ointments to help alleviate symptoms. In most cases, subconjunctival hemorrhages are benign, however, if they recur on multiple occasions and the patient does not take blood thinners or have a medical diagnosis to explain the reason for the hemorrhages, they must be worked up for a potential bleeding disorder.

Chemical Burn

Severe chemical injury. emedicine.medscape.com/article/1215950-overview

A chemical burn to the eye must be seen in office right away. Chemical burns can potentially lead to blindness if not treated immediately. A patient with a chemical burn will present with severe pain, redness and light sensitivity. Upon exam, these patients may show varying amounts of redness and hazing of the cornea. It is crucial to find out what type of chemical made contact with the eye. Acids tend to be less destructive to the eye than their alkali, or basic, counterparts. The affected eye(s) should immediately be irrigated with saline solution and pH test strips should be used every 15 to 30 minutes to check the pH of the ocular surface. The eye should return to a pH of between 7.0 and 7.2 before irrigation can be completed. Depending on the severity of the burn, treatment will include antibiotic ointment, topical steroids and a cycloplegic drop to maintain constant dilation. Severe cases may require placement of amniotic membranes or even surgery.

Angle-Closure Glaucoma

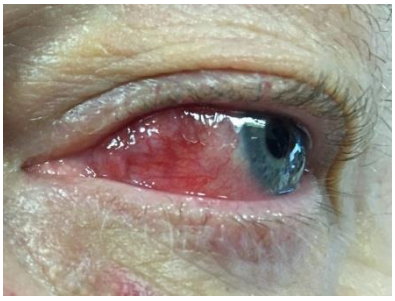
Angle-closure glaucoma is a potentially blinding condition that needs to be seen in office right away. It is a sudden increase in intraocular pressure (IOP) that occurs when the iris is displaced toward the cornea blocking the drainage system of the fluid in the front of the eye. Patients will present with pain, redness, decreased vision with halos, headache and nausea/vomiting. Examination of these patients will reveal a markedly elevated IOP, corneal edema, mid-dilated pupil, shallow anterior chamber (space between the cornea and iris) and conjunctival injection. Immediate lowering of the IOP must be achieved by using any and all topical glaucoma medications in the office and possibly oral medication to lower the pressure. Pressure must be checked periodically until a lower pressure is noted. In some cases a paracentesis, using a needle to remove fluid from the front of the eye, will be performed for the immediate lowering of pressure. Ultimately, these patients will need surgical intervention to prevent further attacks of angle-closure. These will include using a laser to make a small hole in the upper aspect of the iris and/or cataract surgery. Both will move the iris backward to create more of an opening for the drainage system.

Iritis

Iritis is an inflammation of the iris that can be caused by conditions such as trauma, systemic inflammatory conditions, viral infection (herpetic), or may be inexplicable.

Patients will present with pain/aching of the eye and its surroundings, redness, blurriness and light sensitivity. The examination will reveal decreased vision, constricted pupil, an injection that is greater in the perilimbal area (the area just surrounding cornea). Treatment for most cases will include using a cycloplegic drop to dilate the iris in order to help with pain and enhance healing and topical steroids to relieve inflammation. Iritis of viral origin will also need to be treated with oral antiviral medication. If iritis becomes repetitive, systemic workup will need to be performed to detect and possibly treat underlying systemic inflammation.

Episcleritis/Scleritis

1. Episcleritis. Kanski, Jack J. 2007. Clinical Ophthalmology. Sixth Edition. Oxford: Butterworth-Heinemann Ltd
2. Scleritis. www.ophthalmologytraining.com/red-eye-diagnosis/episcleritis-and-scleritis

The episclera is a thin layer of tissue that lies below the conjunctiva and above the sclera. Inflammation of these tissues can be benign and self-limiting or associated with any number of systemic inflammatory conditions. Episcleritis presents with redness with minimal to no pain. The exam can show either diffuse injection or it may be localized to one section of the episclera, known as a sectoral injection. Episcleritis will usually resolve on its own without treatment however, mild topical steroids and oral nonsteroidal inflammatory drugs (NSAIDs) may be used. Scleritis is a deeper inflammation that can range from mild to potentially damaging and sight-threatening. Patients will often present with severe pain that can radiate to the temple and worsen on eye movement, redness, light sensitivity, and possibly decreased vision. The examination will reveal a deep red to almost bluish hue to the sclera, swelling, and dilation of blood vessels. Treating scleritis usually involves treating the systemic inflammation as opposed to just the ocular inflammation with oral NSAIDs, steroids or immunomodulating medications. If severe

ocular damage has occurred, surgery may be needed to aid in repairing the sclera and/or corneal tissue.

In conclusion, it is important for the paraoptometric to be able to identify the signs and symptoms of common red eye diagnoses. This will aid with triaging the patient into the office, helping manage them while there and helping to educate them regarding their particular diagnosis.

References

Kanski, Jack J. 2007. Clinical Ophthalmology. Sixth Edition. Oxford: Butterworth-Heinemann Ltd