CORRESPONDENCE

Red Eye—A Guide for Non-specialists

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Addenda

Frings et al. in their lucid article (1) provide non-specialists with crucial evidence from impressive findings relating to the anterior segment of the eye. We have some additional points to add to the differential diagnosis of red eye:

In patients with glaucoma, instilling some types of pressure-lowering eye drops will often lead to conjunctival hyperemia, which is not caused by inflammation, dryness of the eye, or allergic reactions, but may upset patients because of the reddening.

Particular attention should be paid to keratoconjunctivitis sicca, which is common in older persons. Even though the authors did mention the publication by Messmer et al. (2) (p. 308), it would be desirable if some publications were to actually point out the symptoms that are reported so often by patients in our labor-intensive modern society. Working on computer screens or in dusty air can easily cause conjunctivitis, with red eyes and a sensation of glare; this will inevitably lead to disrupted working routines.

Episcleral and conjunctival venous stasis with additional reddening of the lids can also occur in spontaneously formed low flow arteriovenous fistula between the dural branches of the external carotid artery and the cavernous sinus. The diagnosis of a low flow fistula is occasionally made late by angiography as the symptoms are less obvious than those of a high flow fistula (3).

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Misuse of Cortisone Eyedrops

For non-ophthalmologists, considering keratoconjunctivitis sicca (KCS, "dry eye") as the cause of the red eye symptoms is important, not least because of its overwhelming prevalence; pointing out the history of typical KCS symptoms is therefore important. Acute and chronic problems caused by dry eye include irritation, epiphora or dye eyes, a sensation of pressure, stabbing pains, eye strain/tired eyes, a sensation of a foreign body, blurred vision up to loss of visual acuity, and others.

As red eye (whether caused by KCS or owing to other causes) is primarily an exclusion diagnosis, and the specific proof is arrived at by means of genuine ophthalmologic examinations, it makes compelling sense to present red eye—if not as an emergency—electively to an eye specialist.

The association of conjunctival hemorrhage and conjunctival chalasis in dry eye has been confirmed (2), even though this fact has found far too little attention even among eye specialists. Conjunctival bleeds in KCS patients cease reliably as soon as a therapy consisting of artificial tears and eye ointment at night is adhered to daily.

I recently treated a 40 year old man, who over the years had seen me occasionally for chronic KCS-related conjunctival irritation whenever the cortisone eye drops that he used permanently were not sufficient to suppress the troublesome conjunctival reddening. The cause of the severe eye pain that the patient was experiencing at the time was strongly raised intraocular pressure (33/56 mm Hg) with moderate conjunctival irritation and a clear cornea. The cause was undoubtedly the misuse of cortisone eye drops, which had been prescribed by a doctor in the patient's family. For completeness's sake, it should be mentioned that uncorrected hyperopia and presbyopia cause—in addition to asthenopia—conjunctival irritation as a result of vasodilation, as well as a feeling of eye pressure, headaches, and other general symptoms. This is of differential diagnostic importance in red eye, not least because this constellation of symptoms is very common.

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Useful Pointers

The authors rightly wrote that the cornea should be inspected closely (1). Epithelial defects of the cornea are, however, usually masked by lachrymal fluid, especially in epiphora, with the result that someone without much practice and without a slit lamp will easily miss them.

Using the vital color dye fluorescein can be extremely useful in this setting. Applying the dye shows with great clarity erosions, scratches caused by subtarsal foreign bodies, or the typical dendritic shape in recurrent Herpes simplex infection. In epithelial defects, steroid eyedrops are usually contraindicated.

It is also recommended to have local anesthetic eyedrops to hand during the consultation. Especially in patients who are not able to cooperate or persons with severe eye pain—as in blepharospasm—examination is otherwise almost impossible. The drops are also helpful when removing surface foreign bodies.

The primary care physician may even be able to prevent blindness, as in case of chemical burns, blepharospasm makes careful rinsing of the eye without local anesthesia pretty much impossible, and in this scenario, the time lag before the patient presents to an ophthalmologist can be crucial. For GPs, it is recommended that they keep a store of the required eyedrops as single-dose ophthioles.

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In Reply:

We thank everyone for their valuable feedback to our CME article, which—for editorial reasons—understandably explained the expansive topic only generically (1). Accordingly, we are delighted to take up our correspondents' suggestions and wish to add the following:

To display corneal defects, the ocular surface is stained by using 1 drop of sterile fluorescein (1 µL, 0.2%), which should be stored away from light and (if the preparation is preservative-free) in the fridge. Corneal defects appear under „room light" in a greenish-yellow color, and if a cobalt blue filter is used, they appear green. Applying a drop into the lower conjunctival sac (ask the patient to blink) can provide valuable indications of corneal epithelial defects. Before the dye is applied, contact lenses will have to be removed; these should be replaced only after the eye surface has been rinsed thoroughly (for example, using NaCl 0.9%, 5 mL) and only after about an hour in order to prevent staining the lenses.

In patients with epiphora in the context of the dry eye syndrome, eyelid malposition of the lower lid with eversion of the lacrimal punctum or manifest ectropium should be excluded. We also always flush the lacrimal passages, for the differential diagnostic exclusion of (relative) stenosis of the tear ducts. The point about the local (and systemic) ocular side effects of steroids was well made and important. In such so called steroid responders, the pathologically raised intraocular pressure often remains undetected for a long time and can lead to blindness, owing to secondary glaucoma (2). We therefore recommend that every patient who uses local and systemic steroids for longer than two weeks should present to an ophthalmologist (independently of the dose) for an opinion.

When using topical antiglaucoma medications—especially those that contain the active substances brimonidine or latanoprost—red eye often develops „iatrogenically." This is important because patients often stop their treatment prematurely because they develop red eye. Preservative-free eyedrops (free from benzalkonium chloride) are certainly the better choice, independently of their effective substance. A burning red eye often develops after application of eyedrops containing ciclosporin-A; these are used in the context of therapy for severe keratoconjunctivitis sicca. As a rule, this is a self-limiting finding, which in most patients is better tolerated after the initial two weeks if additionally, overlapping treatment is given of non-preserved dexamethasone eyedrops. As with all steroid containing eyedrops, the treatment should be tapered out (for example, 4 × daily in the first week, and reducing by one drop every subsequent week).

The diagnostic evaluation and therapy of arteriovenous malformations are certainly the preserve of the ophthalmologist and neurosurgeon and should always receive attention as differential diagnoses of red eye.

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Conflict of interest statement
The authors declare that no conflict of interest exists.