

## The Red and Painful Eye

You have to work out whether this is something to worry about. Nobody makes it through life without at least one bout of conjunctivitis, and most of us don't present to emergency with it. Very few of us, however, will go blind from a corneal ulcer infected with Pseudomonas.

**ALL SERIOUS CAUSES OF RED EYE ARE VERY PAINFUL AND UNILATERAL.**

- **BILATERAL RED EYES WITH PUS** is bacterial conjunctivitis, treated with Chloromycetin.
- **BILATERAL RED EYES WITHOUT PUS** is viral conjunctivitis unless there is history of connective tissue disease or exposure to some sort of allergens, or a dust storm.
- **UNILATERAL RED EYE WITH PUS** is an infected corneal ulcer until otherwise proven. Look for a foreign body. Otherwise, ..is the pus even coming from the conjunctiva?...
- **UNILATERAL RED EYE WITHOUT PUS** is a cause for concern and requires more thought;

**NEVER PUT A PAD ON AN EYE WITH PUS. Allow it to drain.**

- **Is there loss of visual acuity?** If yes, something is rotten in the anterior chamber or the whole globe. If not, you have excluded a whole number of dangerous eye problems.
- **Is there an unreasonable amount of pain?** You will need to exclude glaucoma and endophthalmitis; ask about systemic symptoms
- **Is the pupil reactive?** An unreactive pupil with a strange shape to it is almost diagnostic of glaucoma
- **Is the cornea still sensitive?** Only dendritic ulcers cause a loss of sensation
- **Are there stereotypical vesicles of Herpes Zoster?**
- **Is there photophobia?** Iritis presents with an unusual amount of photophobia
- **Is there history of trauma?** Examine for hypopyon and hyphaema

**IS THE CORNEA NORMAL-LOOKING? IS THERE NO FOREIGN BODY?**

- If the answer to everything above is NO, its probably just viral conjunctivitis.

**A corneal abrasion should heal within 24 hours.**

There are 4 serious conditions you need to look out for:

### - Acute Glaucoma

-The affected eye is **very painful**; there is **headache, nausea and vomiting**  
- **the eye is also tender to palpation**;  
- **THE PUPIL IS MID-DILATED AND UNRESPONSIVE**

### - Corneal Ulcer

this starts off as some sort of foreign body; but a traumatic ulcer rapidly becomes an infected bacterial ulcer. **The eye is very painful, red and sticky.**  
**The ulcer is very obvious with even a naked-eye fluorescein examination**

### - Dendritic Ulcer

These are **VERY PAINFUL**, especially after 2-3 days. **The eye is very watery, but there is no actual pus. The characteristic feature is LOSS OF CORNEAL SENSITIVITY-** poke it all you like. On fluorescein examination, the ulcer should show up as a vivid "dendritic" i.e. tree-like branching defect. In all honesty it looks more like an amoeba.

### - Endophthalmitis

This is pretty rare, but needs immediate attention (infection is in the vitreous humour!) These are **people who present 3 – 4 days after ocular surgery. VISUAL ACUITY IS SERIOUSLY IMPAIRED.**

**IF the visual acuity, the pupil reaction and the cornea slit-lamp exam are all normal, you have excluded the four most serious eye conditions.**

## EXAMINATION: the steps you should always follow

**VISUAL ACUITY:** recorded as X/Y, where X is the testing distance and Y is the line of the smallest letters readable by the patient. Don't be lazy, just do it. Check each eye separately, with their own glasses.

**EYELID EVERSION:** use a cotton bud to roll the eyelids up.

**PUPIL EXAMINATION:**

- **Direct response:** you shine the light at the pupil, and it constricts.
- **Consensual response:** the other pupil should also constrict
- **Afferent Pupillary Defect:** testing the optic nerve; once the light is used to constrict one Pupil (well, both - one directly, the other consensually), move the light to the other pupil. If there is a defect, the pupil will dilate.
- **Accommodation:** the pupil should constrict to look at near objects and dilate to look at far objects. An Argyll Robertson pupil of a syphilis patient will do this just fine, but won't react to light.

**FUNDOSCOPY:** follow the vessels to the optic disc.

**SLIT LAMP:** remember to look at EVERYTHING, all of the quadrants of the eye. Peel back the eyelids with your clean recently washed fingers; make the patient look to the extreme left, right, up and down

**FLUORESCHEIN:** otherwise known as resorcinophthalein, is a bright yellow-orange dye. It does not stain a normal cornea or conjunctiva but picks up any minor irregularity, abrasion, ulcer, et cetera. It's also quite a good medium for Pseudomonas; so only use the single-use disposable packs.

**MINIMS EYE DROPS:** amethocaine 1%; local anaesthetic which lasts for about 30 minutes.

**WARN THEM:** it stings like hell. If you are going to send the patient home, give them an eye patch lest some sort of filth fly into their insensate eye. Amethocaine will interact with sulfonamides and should not be used in people who take them.

The "red eye" conditions can be classed into painful and painless.

### PAINLESS REDNESS

Starting at the eyelids, working inward:

- **BLEPHARITIS:** the redness and inflammation of the eyelids; usually either involving the eyelash line (a form of seborrhoeic dermatitis) or the back part of the eyelid that makes contact with the eye. Regular eye washing and lubricating drops are in order.
- **ECTROPION:** outward turning of the eyelids; needs lubricants.
- **ENTROPION:** inward turning of the eyelids- somewhat more worrisome as it will likely cause corneal abrasion. Check with fluorescein. If abrasions are not present, you should use eye lubricants. If there is an abrasion, the management involves taping back the eyelid; but in the long term these people need to see an eye specialist for definitive management
- **PTERYGIUM:** a solitary fleshy growth; this usually needs to be removed electively
- **SUBCONJUNCTIVAL HAEMORRHAGE:** the sclera will be invisible, and the eye will have a reasonably well circumscribed area of blood under the conjunctiva. This in itself is not fearsome; however you will need to check blood pressure (is it stupidly high?) and potentially cease antiplatelet drugs and anticoagulants

**PAINFUL REDNESS** usually means something is wrong with the conjunctiva and/or cornea.

You have to pull out the fluorescein and examine these structures.

- **DENDRITIC ULCER:** Herpes Simplex infection; needs topical acyclovir. Once you have seen one, it's impossible to miss. The fluorescein examination is diagnostic; also most of the time the corneal sensation is almost totally absent- test it with a corner of tissue paper

- **BACTERIAL or AMOEBIC ULCER:** looks like a little crater, an epithelial defect with an opacified base. This needs immediate referral, because extensive ulceration heals badly and in the future, eyesight will be markedly affected by tiny little blood vessels overgrowing in the scar.
- **ACUTE BLEPHARITIS:** This can get out of hand when normal bog-standard blepharitis is neglected and gets infected with Staph Aureus. Topical antibiotics are needed. One needs to also examine the cornea- **MARGINAL KERATITIS may result** and it looks like areas of corneal ulceration around the borders of the cornea.
- **HERPES ZOSTER:** needs to be considered whenever there is a vesicular rash. Oral antivirals with 72 hrs is the best management. After 72 hrs the horse has bolted. Famciclovir is a favourite.

**CONJUNCTIVITIS** will usually start out unilateral, and become bilateral in a few days.

The rule of thumb is that bacterial conjunctivitis usually has loads of pus, and viral is merely watery.

- **BACTERIAL CONJUNCTIVITIS:** pus is the dominant feature; hard to open the eyes in the morning. The anterior chamber and the cornea are usually not involved. Topical antibiotics are required for 5 days or so – if its not getting better, you must consider **Chlamydia** or **Amoeba**
- **VIRAL CONJUNCTIVITIS:** watery but not pus-exuding. **THIS IS THE MOST CONTAGIOUS CONJUNCTIVITIS.** It looks a lot like **allergic conjunctivitis**, but with less itching. **BOTH ARE SELF LIMITING AND TREATED THE SAME:** with lubricating eye drops.

**THE ANTERIOR CHAMBER** is where everything dangerous and interesting will be.

Anterior chamber problems will inevitably present with some loss of visual acuity.

- **ACUTE GLAUCOMA:**
  - hazy cornea
  - visual acuity is impaired; patient reports halos around everything
  - irregular pupil
  - unreactive and mid-dilated pupil
  - tender tense eyeball
  - systemic symptoms of nausea, vomiting, headaches

**MANAGEMENT:**

1 drop every 5 minutes in the first hour

→ **PILOCARPINE 4% eye drops** ( this is a cholinergic drug; it will stimulate sudden pupil constriction which will last for 4-8 hours).

500mg stat and then 250mg orally, every 6 hours

The idea is that by pulling the iris border inward, the aqueous humour outflow becomes unblocked. **The pupil may not constrict if the iris is ischaemic from raised pressure**  
 → **ACETAZOLAMIDE** – carbonic anhydrase inhibitor; decreases secretion of aqueous humour

1 drop every 2 hours for the first 6 hours

{ **TIMOLOL 0.5%** - beta blocker; also reduces aqueous humour production  
**BRIMONIDINE 0.2%** -alpha-2-agonist – increases outflow, decreases production  
**LATANOPROST 0.005%**- prostaglandin F2-alpha analogue – increases outflow

- **IRITIS or UVEITIS:** the anterior chamber is cloudy with floating bits, impairing vision.
  - Typically, there is **photophobia**
- **Hypopyon:** nasty-looking collection of pus at the bottom of the anterior chamber.  
**This needs IMMEDIATE REFERRAL – to investigate for infection and malignancy**
- **Hyphaema:** blood in the bottom of the anterior chamber; usually after being hit in the face.  
**This needs IMMEDIATE REFERRAL also, in the event that the bleeding is continuing**

Eye Emergency Manual on CIAP (NSW Health) [http://www.health.nsw.gov.au/gmct/ophthalmology/pdf/eye\\_manual.pdf](http://www.health.nsw.gov.au/gmct/ophthalmology/pdf/eye_manual.pdf)

eTG therapeutic guidelines on CIAP

Tintinalli's Emergency medicine on AccessMedicine, Ch. 238

"the Thirty Five Golden Eye Rules", Colvin and Reich [http://www.eyearandear.org.au/training/EYELectures/35\\_Golden\\_Eye\\_Rules.pdf](http://www.eyearandear.org.au/training/EYELectures/35_Golden_Eye_Rules.pdf)