"GOT AN EYE ON YOU!" HOW TO DIAGNOSE AND DISPOSITION DANGEROUS CAUSES OF RED EYE FOR THE PRIMARY CARE PA

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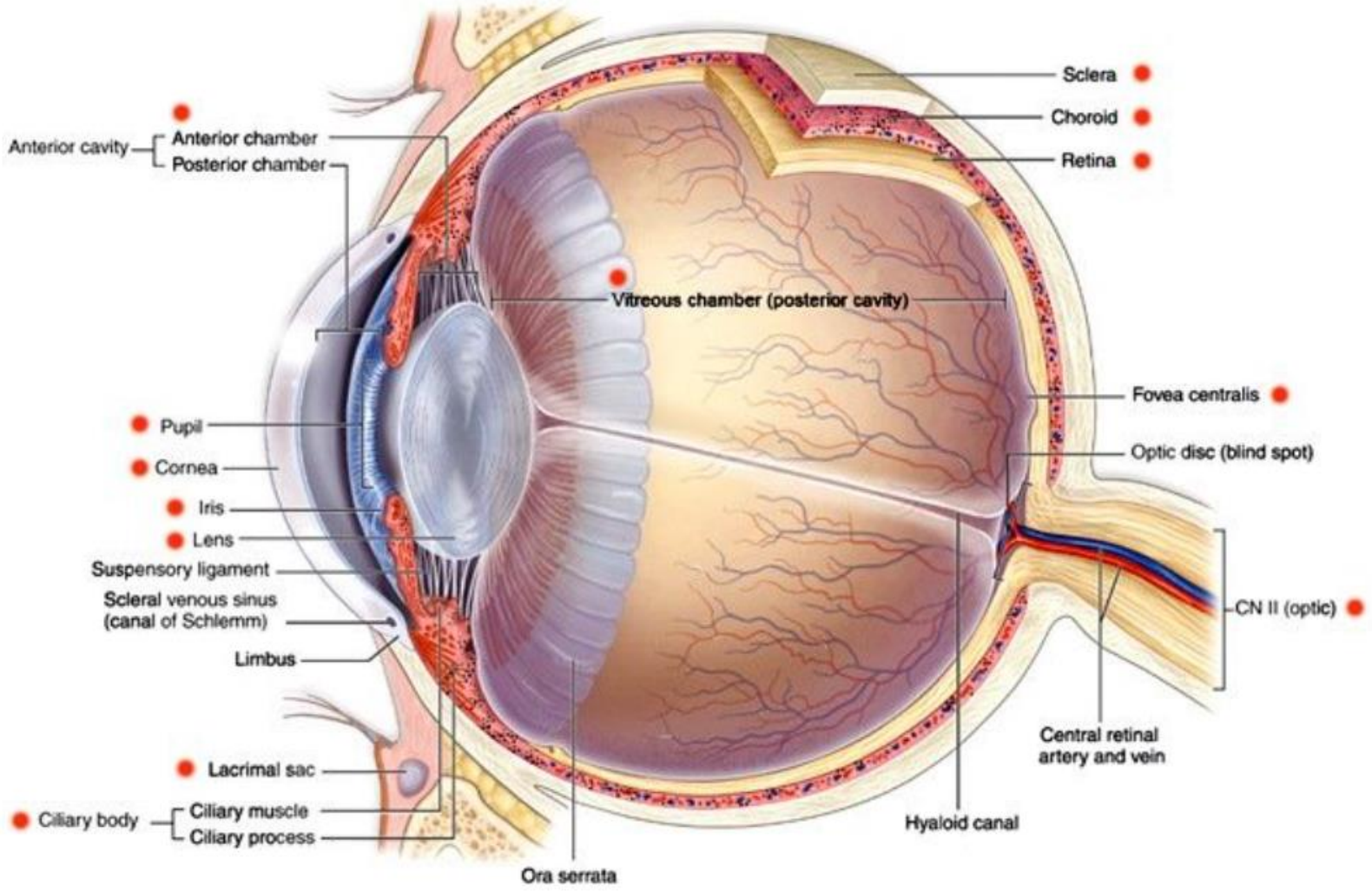
DISCLOSURES

- NADA!!

LECTURE OBJECTIVES

- Recognize the historical, clinical, and physical exam features of causes of 'Red Eye' that can be dispositioned safely as an outpatient.
- Recognize the historical, clinical, and physical exam features of causes of 'Red Eye' that will need urgent vs emergent referral.
- Review common ophthalmologic diagnostics and physical exam features to build an accurate diagnosis to disposition and treat the patient appropriately.

LET'S REVIEW SOME EYE ANATOMY



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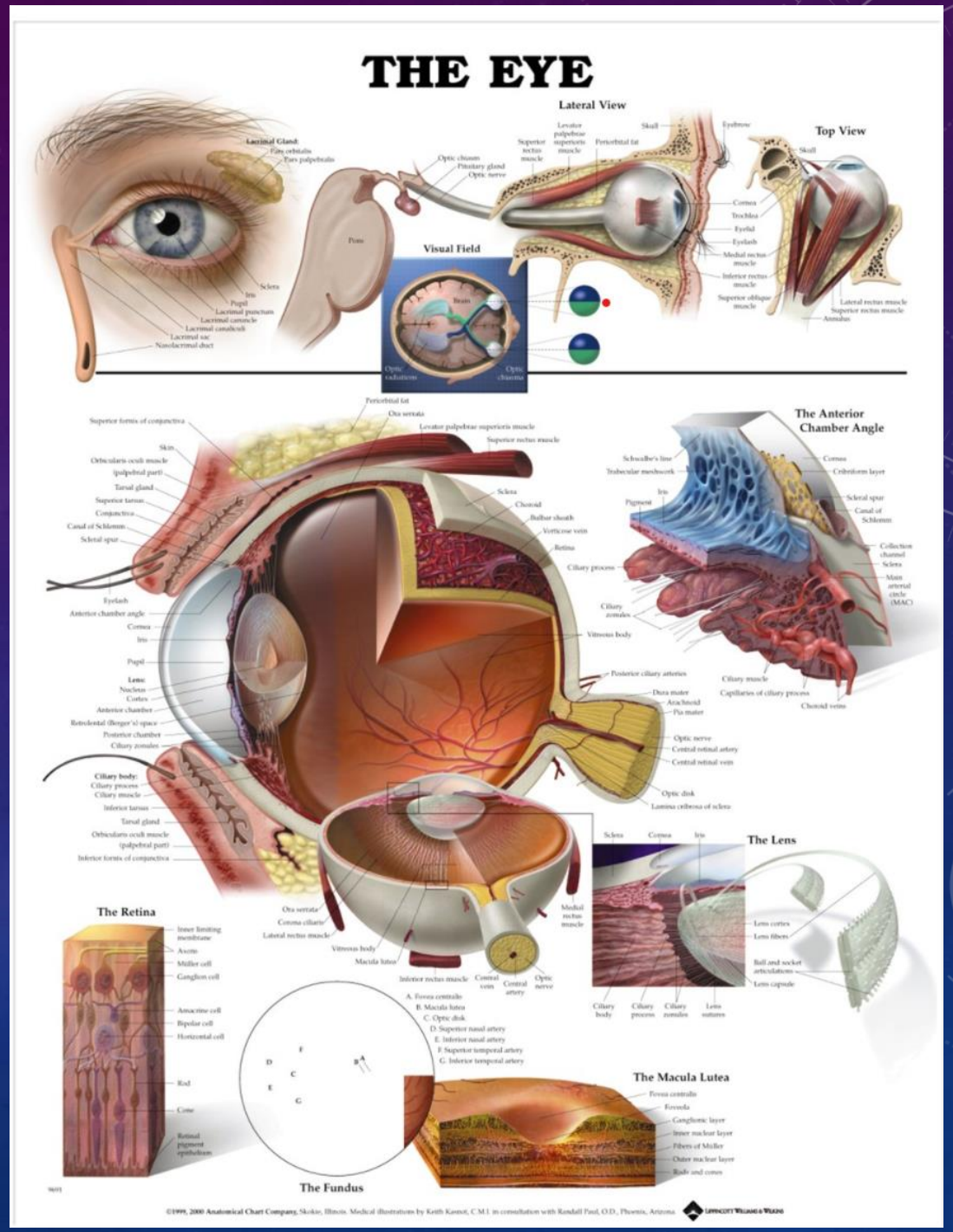


1. RECOGNIZE THE HISTORICAL, CLINICAL, AND PHYSICAL EXAM FEATURES OF CAUSES OF 'RED EYE' THAT CAN BE DISPOSITIONED SAFELY AS AN OUTPATIENT.

- **Common etiologies:**
  - Stye (Hordeolum)
  - Chalazion
  - Blepharitis
  - Subconjunctival Hemorrhage
  - Conjunctivitis (bacterial, viral, and allergic) - simple
  - Corneal abrasion -simple
  - Corneal foreign bodies-punctate
  - Acute Dacryocystitis & Acute Dacryoadenitis

2. RECOGNIZE THE HISTORICAL, CLINICAL, AND PHYSICAL EXAM FEATURES OF CAUSES OF 'RED EYE' THAT WILL NEED URGENT VS EMERGENT REFERRAL.

- Bacterial and viral infectious keratitis
- Larger corneal abrasions and ulcers
- Acute angle-closure glaucoma
- Hyphema
- Hypopyon
- Uveitis/iritis
- Ocular Burns (Alkali, Acid)
- Blunt Trauma

3. REVIEW COMMON OPHTHALMOLOGIC DIAGNOSTIC AND PHYSICAL EXAM FEATURES TO BUILD AN ACCURATE DIAGNOSIS TO DISPOSITION AND TREAT THE PATIENT APPROPRIATELY.

- Visual acuity
- Fundoscopic exam
- Fluorescein-staining exam
- Slit-lamp exam
- IOP (Intra-ocular pressure)

IT'S ALL ABOUT THE HISTORY….

- Gathering an accurate history is **paramount** in differentiating which patients would be ideal to manage on an outpatient basis and those needing referral to a specialist.
- Inquiring on whether the patient has sustained visual loss, eye pain, contact-wear use, and/or trauma to the affected red eye(s) is an important first step.
- Common types of eye pain are characterized as burning, throbbing, and aching. The clinician should also ask whether the patient has had loss of vision, photopsia or "flashing lights" (common precursor to retinal detachment), photophobia (typically a corneal process), foreign-body sensation, discharge from the eye(s) and what type.
    - Foreign body sensation is a cardinal sign of a corneal process and should warrant further investigation to evaluate for corneal abrasion, corneal ulcer, or corneal foreign body.

IT'S ALL ABOUT THE HISTORY….YES, IT REALLY IS

- If the patient sustained trauma to the eye, inquire further if the patient sustained blunt trauma, foreign body, or a potential chemical Arc/UV burn to the eye.
- Blunt trauma may include physical fights, or objects that may have been thrown into the eye.
- If the patient elicits a history concerning for foreign body, inquire further as to whether the foreign body may have been a metallic shaving, penetrative trauma (e.g. high-speed machinery), or organic material that may carry infective vectors (e.g. *C. tetani*). Were they wearing eye-protection?

PHYSICAL EXAM: VISUAL ACUITY

- Testing visual acuity is the most important first step in examining the eyes since most of the vision-threatening causes of eye pain or red eye affect visual acuity.
  - (The only exception to this rule is chemical burns to the eye(s), in which copious irrigation takes precedence of visual acuity.)

- Visual acuity is typically documented using a Snellen wall chart or Rosenbaum card. If a Snellen chart is used, the patient should stand 20' from the wall that the chart is mounted on and is asked to read the smallest line in which the patient can read one-half of the letters correctly.
- This process is conducted for each eye individually and then with both eyes open. If the patient reports using eye glasses or contact lenses, they should be worn during acuity testing.

PHYSICAL EXAM: PEN-LIGHT EXAM

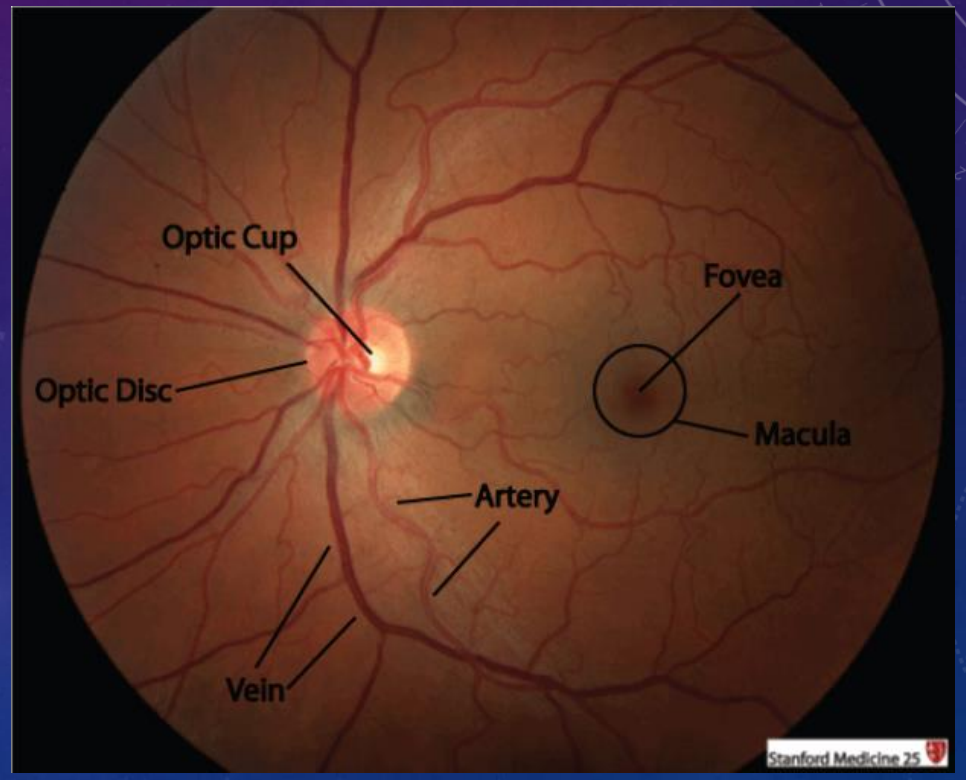
- Simple pen-light examination can be helpful in differentiating different causes of red eye.
  - Used initially for observing for pupil dilation, constriction, and direct/consensual pupillary reflexes.
  - Red reflex is also helpful to quickly let you know that the retina is not obscured or detaching!

PHYSICAL EXAM: FLUORESCEIN-STAINING

- Fluorescein dye works by staining corneal epithelial cells that have been damaged by trauma or infection and fluoresce green with the aid of a UV Wood's lamp or by using the cobalt blue-light filter on an ophthalmoscope.

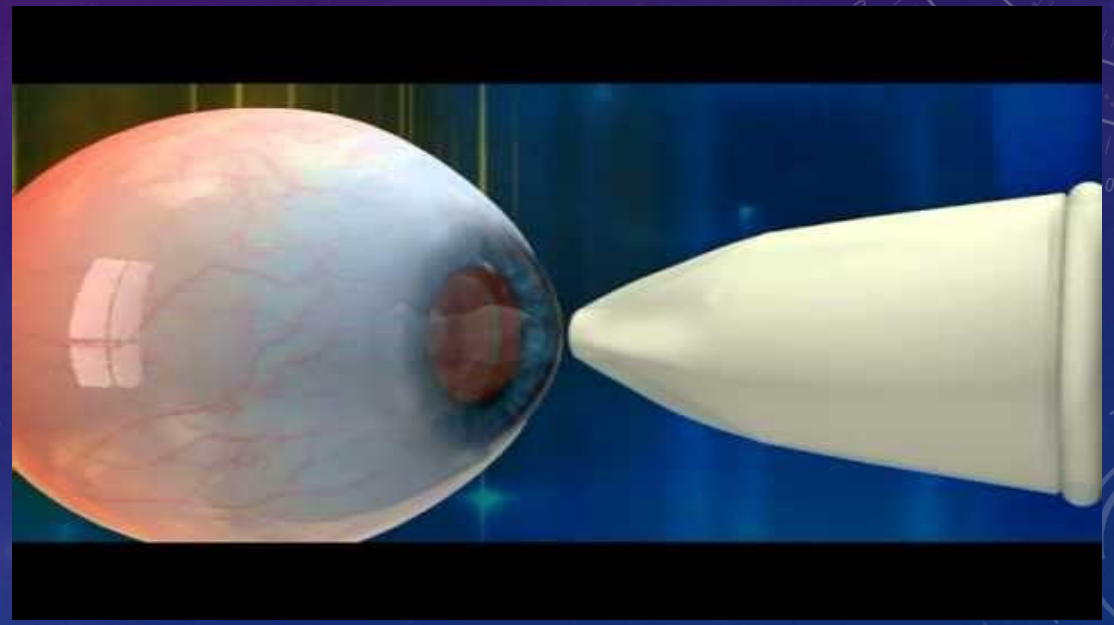
PHYSICAL EXAM: FUNDOSCOPIC EXAM

- Direct fundoscopic exam is very helpful tool for examining the cornea, lens, optic cup and nerve, retina and retinal vessels.



PHYSICAL EXAM: INTRAOCULAR PRESSURE (IOP)

- Most office are now equipped with a Tono-Pen, which can measure intraocular pressure. The average of all three measurements is documented in the chart.



PHYSICAL EXAM: SLIT-LAMP EXAMINATION

- If you are comfortable performing this special test, it should be done before and after fluorescein staining to check for corneal abrasions and to evaluate the anterior chamber with more detail.

SPECIFIC DISORDERS

What can stay:

- Hordeolum (stye)
- Conjunctivitis (viral, bacterial, and allergic)
- Blepharitis
- Subconjunctival hemorrhage
- Corneal abrasion (small) & punctate ulcers
- Corneal foreign bodies (miniscule)
- Acute Dacryocystitis
- Acute Dacryoadenitis

What needs to go:

- Bacterial and viral infectious keratitis
- Larger corneal abrasions and ulcers
- Acute angle-closure glaucoma
- Hyphema
- Hypopyon
- Uveitis/iritis
- Ocular Burns (Alkali, Acid)
- Blunt Trauma

ACUTE HORDEOLUM

Source: J.E. Tintinalli, J.S. Stapczynski, O.J. Ma, D. Yealy, G.D. Meckler, D.M. Cline: Tintinalli's Emergency Medicine: A Comprehensive Study Guide, 9th Edition: Copyright © McGraw-Hill Education. All rights reserved.

- Internal hordeolum's, or Stye's, are a common superficial infection of the meibomian gland and is most frequently caused by S. aureus. Patient's will usually complain of erythema and a localized, visible papule over the eyelid. These patients can safely be managed with warm compresses and ophthalmic erythromycin 0.5%, twice daily for 7 days.

ACUTE BACTERIAL CONJUNCTIVITIS

Source: J.E. Tintinalli, J.S. Stapczynski, O.J. Ma, D. Yealy, G.D. Meckler, D.M. Cline: Tintinalli's Emergency Medicine: A Comprehensive Study Guide, 9th Edition: Copyright © McGraw-Hill Education. All rights reserved.

- Bacterial conjunctivitis classically presents with copious mucopurulent discharge with "matting" of the eyelids upon awakening.
- Patients will also have chemosis (swelling of the conjunctiva) and occasionally have photophobia with foreign body sensation.
- These patients should still undergo fluorescein staining to avoid missing an underlying corneal ulcer or abrasion (from scratching).
- These patients can safely be managed with ophthalmic polymyxin B/trimethoprim, q3h x 7 days. If the patient reports recent extended contact lens usage, ensure that the patient is covered for *Pseudomonas* with a ophthalmic fluoroquinolone (Ciloxan or Ocuflox).

ACUTE VIRAL CONJUNCTIVITIS

- Patients with viral conjunctivitis will usually present with unilateral eye redness that may progress to both eyes several days later and is commonly preceded by an upper respiratory infection.
- Adenovirus is the most common cause of viral conjunctivitis and is usually self-limited, requiring only conservative therapy.

ACUTE ALLERGIC CONJUNCTIVITIS

- Allergic conjunctivitis is typically associated in patients with underlying atopy and presents with bilateral eye redness, itching, rhinorrhea and a watery discharge. Once the allergen is removed and treated with systemic antihistamines, the eyes may be treated with cool compresses and artificial tears.

CORNEAL ABRASIONS

Clinical Pearls:

- Severe pain, photophobia, blurry vision, but VA should still be intact!
- Fluorescein uptake with Woods lamp confirms the diagnosis.
- Rule out globe perforation.
- Always evert lids!

CORNEAL FOREIGN BODIES

Clinical Pearls

- FB sensation with pain
- May need to rule out intraocular FB
- Evert lids
- Fluorescein stain

Classic rust ring appearance

DACRYOADENITIS VS DACRYOCYSTITIS

Dacryoadenitis

Dacryocystitis

- Mainstays of treatment:
  - Warm compresses
  - Systemic antibiotics (Strep and MRSA)
  - Analgesics
  - Occasional I&D for dacryoadenitis (I would recommend referral to Oculuplastics if you have them)

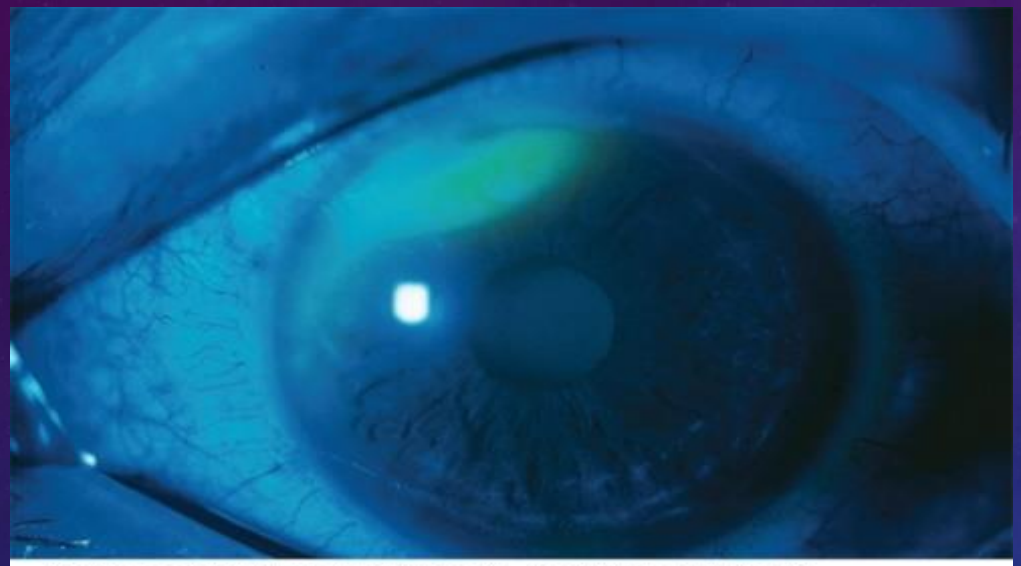
SUBCONJUNCTIVAL HEMORRHAGE

Source: J.E. Tintinalli, J.S. Stapczynski, O.J. Ma, D. Yealy, G.D. Meckler, D.M. Cline: Tintinalli's Emergency Medicine: A Comprehensive Study Guide, 9th Edition: Copyright © McGraw-Hill Education. All rights reserved.

- This is a common disorder of the subconjunctival tissue arising from a painless collection of blood. These hemorrhages occur spontaneously, but may be preceded by repetitive vomiting or coughing. Vision is not affected and this disorder is self-limited, mainly education and reassuring the patient.

2. RECOGNIZE THE HISTORICAL, CLINICAL, AND PHYSICAL EXAM FEATURES OF CAUSES OF 'RED EYE' THAT WILL NEED URGENT VS EMERGENT REFERRAL.

CORNEAL ABRASIONS AND ULCERS



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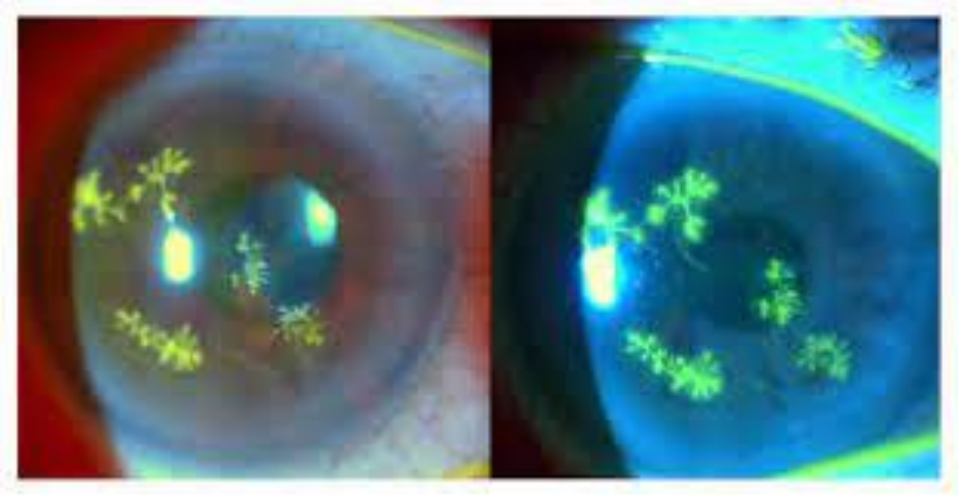
- Corneal abrasions may be caused by frequent contact use, foreign bodies blown into the eye (e.g. dirt on a windy day), or metallic foreign bodies that can be ejected into the eye while grinding, working underneath vehicles or during construction.
- Patients may present with intense pain, photophobia, redness and tearing.
- Examination typically includes instilling fluorescein stain into the affected eye by dropping 2-3 gtts of ophthalmic tetracaine over the strip and allowing it to drip directly into the eye.
- The abrasion will usually appear as a linear, or punctate superficial defect of the corneal. Multiple, linear abrasion should raise the concern of retained foreign body under the upper eyelid.

HSV KERATITIS

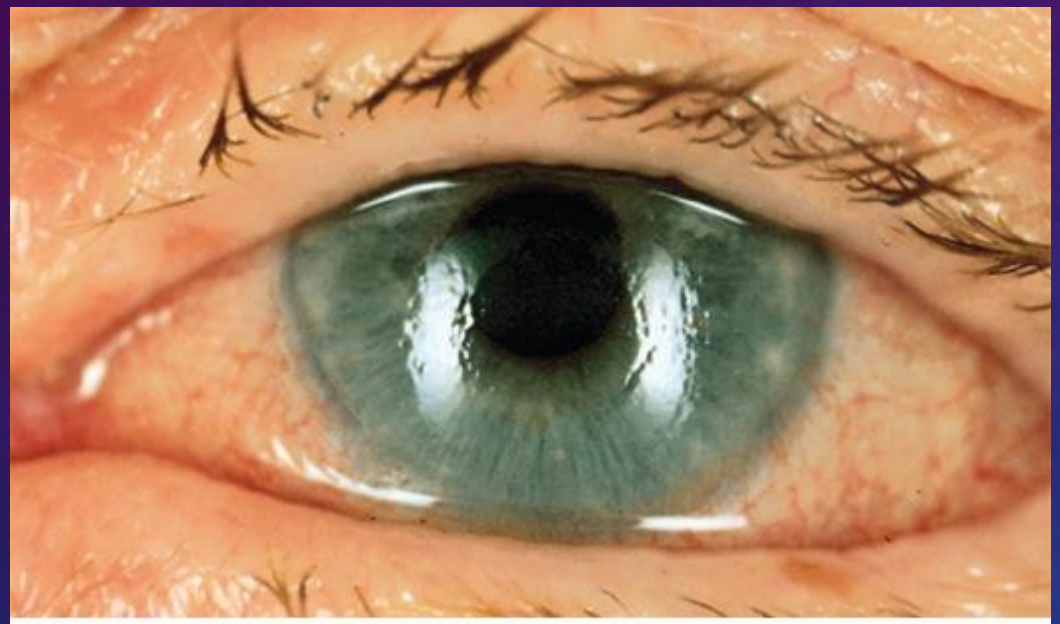


- Again, patients should undergo fluorescein staining to avoid missing other causes of viral conjunctivitis, such as HSV keratitis or zoster, which may present as a dendritic ulcer.

CORNEAL ABRASIONS AND ULCERS

- If the ulceration is thought to be related to contact wear use, *Pseudomonal* infections should be covered with ophthalmic fluoroquinolones (Cipro or Ofloxacin, 3-4 times daily). Otherwise, erythromycin ointment can be used for most other simple corneal abrasions (3-4 times daily).
- Corneal abrasions are more serious infections of the eye because they involve deeper layers of the cornea. The epithelial layer is typically invaded traumatically (allowing bacteria to enter the cornea), direct invasion by bacteria, or corneal desiccation during Bell's palsy (via sloughing of epithelium by eyelids not completely closing).

ACUTE ANGLE-CLOSURE GLAUCOMA



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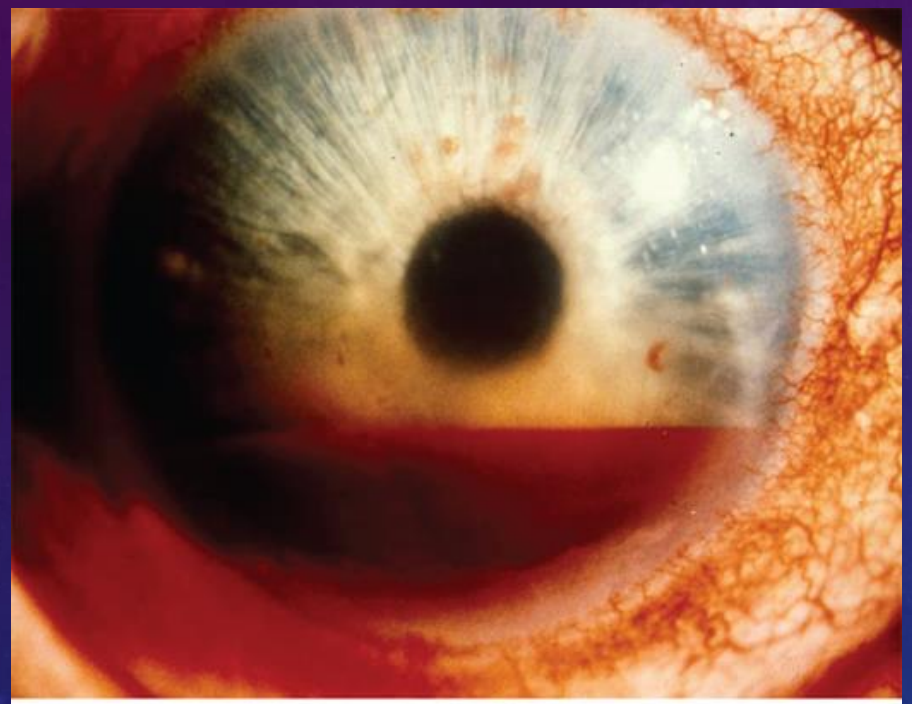
- Patients presenting with this condition will typically have an abrupt onset of severe pain, decreased vision in the affected eye and injection of the conjunctiva. Patients may also complain of headache, nausea and vomiting.
- Physical exam may reveal a "cloudy cornea" with a fixed pupil, conjunctival injection and a "hard" globe. The hallmark of diagnosis will be markedly elevated IOP (> 60-80 mmHg). These patients will need prompt referral to a local emergency department or same day evaluation by an ophthalmologist.

HYPHEMA



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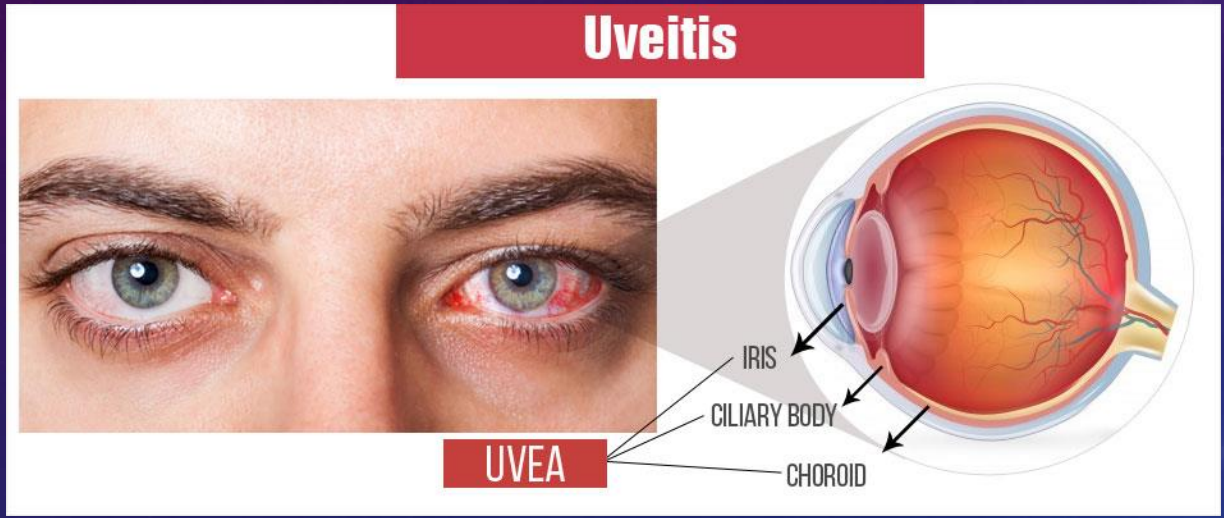
- Hyphema is a collection of red blood cells in the anterior chamber of the eye and is typically sustained traumatically. A hyphema can be seen grossly by having the patient sit upright and will usually "layer out" as the patient lies supine. Treatment is self-limited but should be directed by an ophthalmologist.

ANTERIOR UVEITIS (AKA: IRITIS)

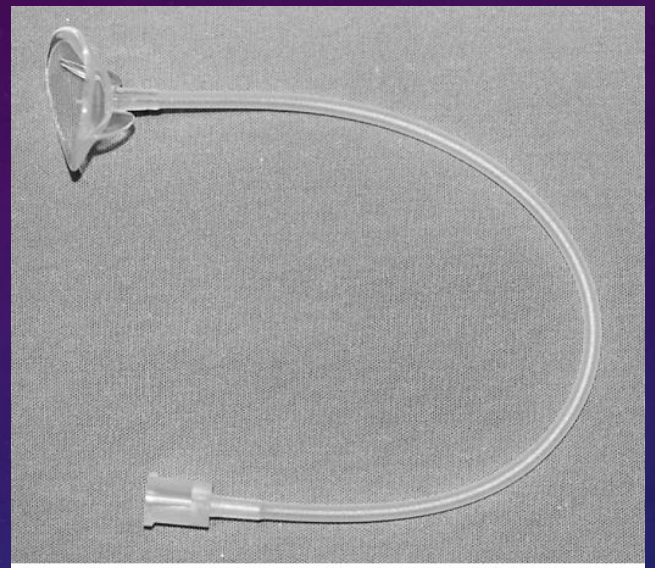


- Uveitis is an inflammation of the iris and ciliary body (also called iridocyclitis) and is typically characterized by severe photophobia pain, and a constricted pupil that is secondary to pupillary spasm.
- Typically treated with a long-acting cycloplegic agent, Tropicamide 1%, 1-2 gtt q 5min x 2 doses only.
- These patients will need referral to ophthalmology within 24-48h for topical corticosteroids.

OCULAR BURNS

Alkali and Acid Burns

- Ocular burns are the 2nd most common type of burn after the hands!
- Alkali burns are more serious than acid burns because particulate matter can remain imbedded with the cul-de-sac and cause continued damage to the eye.
- Apply topical Tetracaine!
- Copious irrigation with NS or LR using Morgan lens.
- Check pH with litmus paper before and after irrigation.



BLUNT OCULAR TRAUMA

Clinical Pearls:

- History is King!
- Evert lids!
- Always fluorescein stain them!
- Slit-lamp if you are able
- Always CONSIDER imaging these patients!
  - (Easy to miss FBs and orbital bone injury)