EVALUATION AND TREATMENT OF

THE RED EYE

TARA MCSWIGAN, MPAS, PA-C

DISCLOSURES

- Tara mcswigan has no professional affiliations nor financial interests to disclose pertaining to this topic.

Objectives

- Execute a problem-focused examination of the red eye
- Differentiate among a host of red eye pathologies
- Initiate proper plan of care and/or referral for prompt management

EXPERT EYE WITNESS

- FEW AREAS OF MEDICINE IMPACT THE PATIENT'S QUALITY OF LIFE AS DOES HIS ABILITY TO SEE
- RED EYES PRESENT WITH CONSIDERABLE FREQUENCY TO PRIMARY MEDICINE/URGENT CARE/EMERGENCY MEDICINE

EXPERT EYE WITNESS

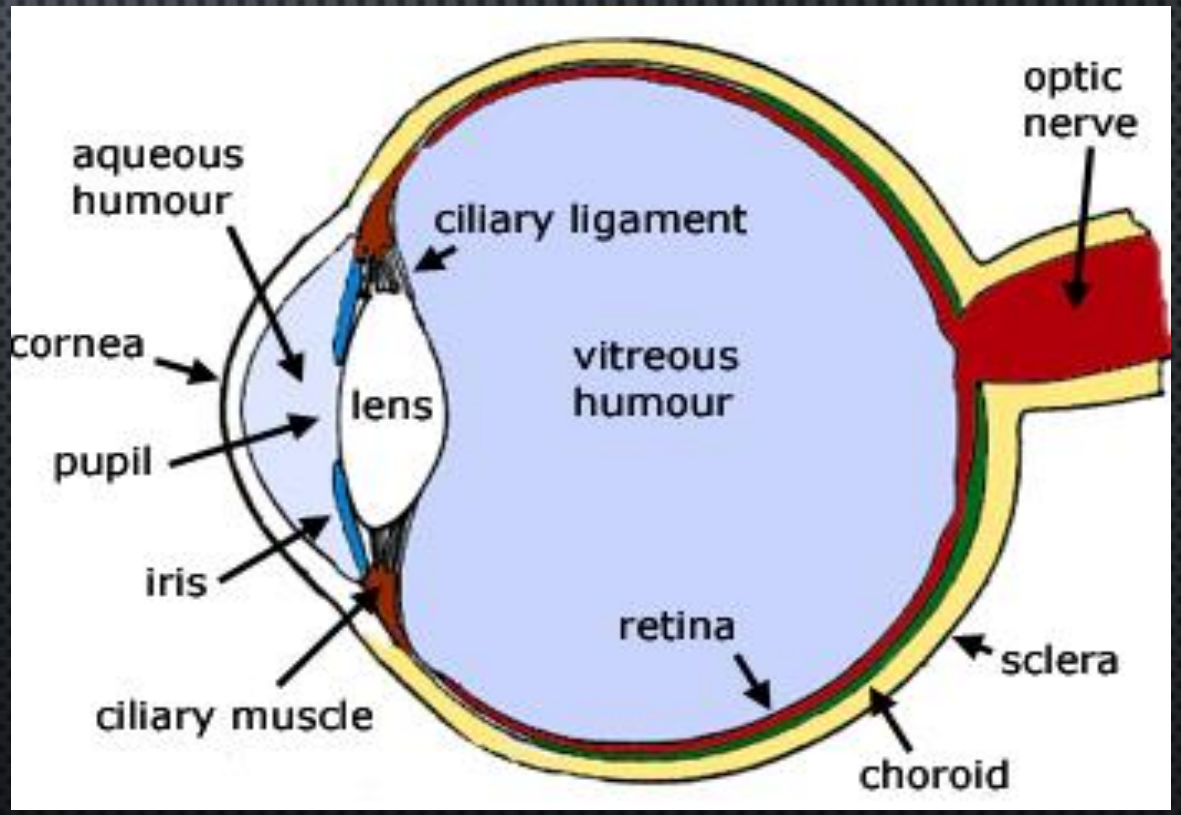
- WHAT'S SO WRONG WITH RED? SPECTRUM OF PATHOLOGY, SEVERITY, AND IMPLICATIONS
- QUICK DIFFERENTIAL/PLAN OF CARE HAS GREAT IMPACT UPON OUTCOMES

Pertinent History

- Painful condition: think anterior eye
- Impact on vision?
- Recent trauma/illness?
- Use of contacts?

SYSTEMATIC EXAMINATION: ANTERIOR TO POSTERIOR

- **ANTERIOR:** LIDS, LASHES, SOFT TISSUE AND ORBITAL STRUCTURES
- **MID-EYE:** CORNEA, ANTERIOR CHAMBER, IRIS, CILIARY STRUCTURES, UVEA, LENS, CONJUNCTIVA
- **POSTERIOR:** GLOBE/VITREOUS, RETINA, NEUROVASCULAR DISTRIBUTION, CUP/DISK, MACULA



http://www.a-levelphysicstutor.com/images/optics/eye-diagram.jpg

Pertinent Physical: Remember the Basics

- How about those pupils?
- Extraocular movements?
- Always always check visual acuity!
- May need to obtain intraocular pressure (IOP)

NOW…THE RED EYE!

- Four questions:
  - What's the red?
  - Why's the red?
  - How bad is it?
  - Treatment?

SEEING RED: EXTERNAL STRUCTURES
STYE/HORDEOLUM

- WHAT'S THE RED?
  - INFLAMMATION OF LID MARGIN, UPPER > LOWER, INTERNAL AND EXTERNAL

EXAM FINDINGS

https://1.bp.blogspot.com

Seeing Red: External Structures
Stye/Hordeolum

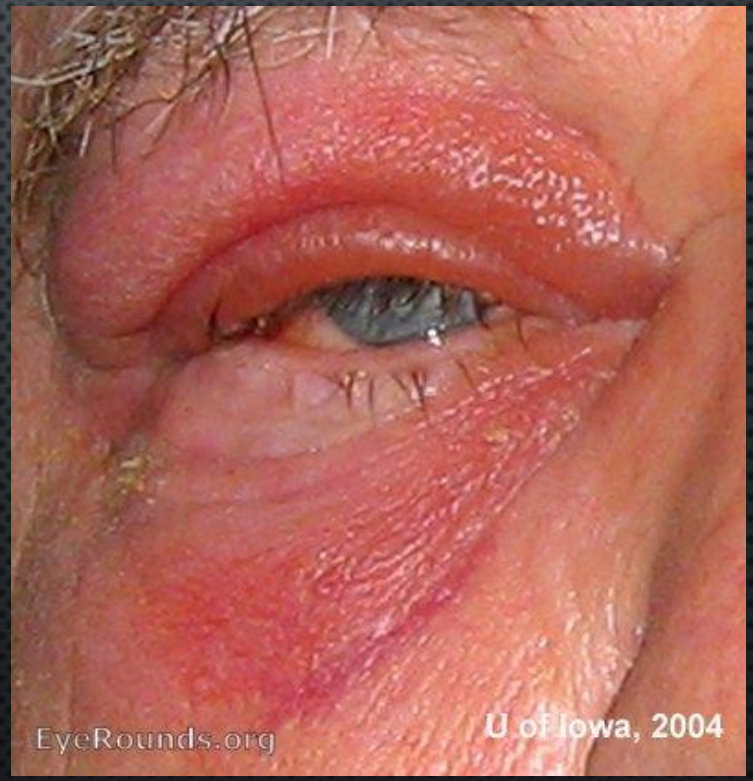
- Why's the red?
  - Blockage of oil gland of lid margin, secondary inflammation or mild infection
- How bad is it?
  - Typically self-limited
  - Can evolve into secondary staph/strep blepharitis

SEEING RED: EXTERNAL STRUCTURES
STYE/HORDEOLUM

- TREATMENT:
  - WARM MOIST COMPRESSES
  - SOMETIMES TOPICAL ANTIBIOTICS [TOBRAMYCIN (TOBREX), POLYMYXIN B/TRIMETHOPRIM (POLYTRIM)]
  - RARELY ORAL ANTIBIOTICS

SEEING RED: EXTERNAL STRUCTURES
PERI-ORBITAL/ORBITAL CELLULITIS

- WHAT'S THE RED?
  - INFLAMMATION OF LIDS, SURROUNDING SOFT TISSUES, CONJUNCTIVA, AND PERIORBITAL FATTY STRUCTURES



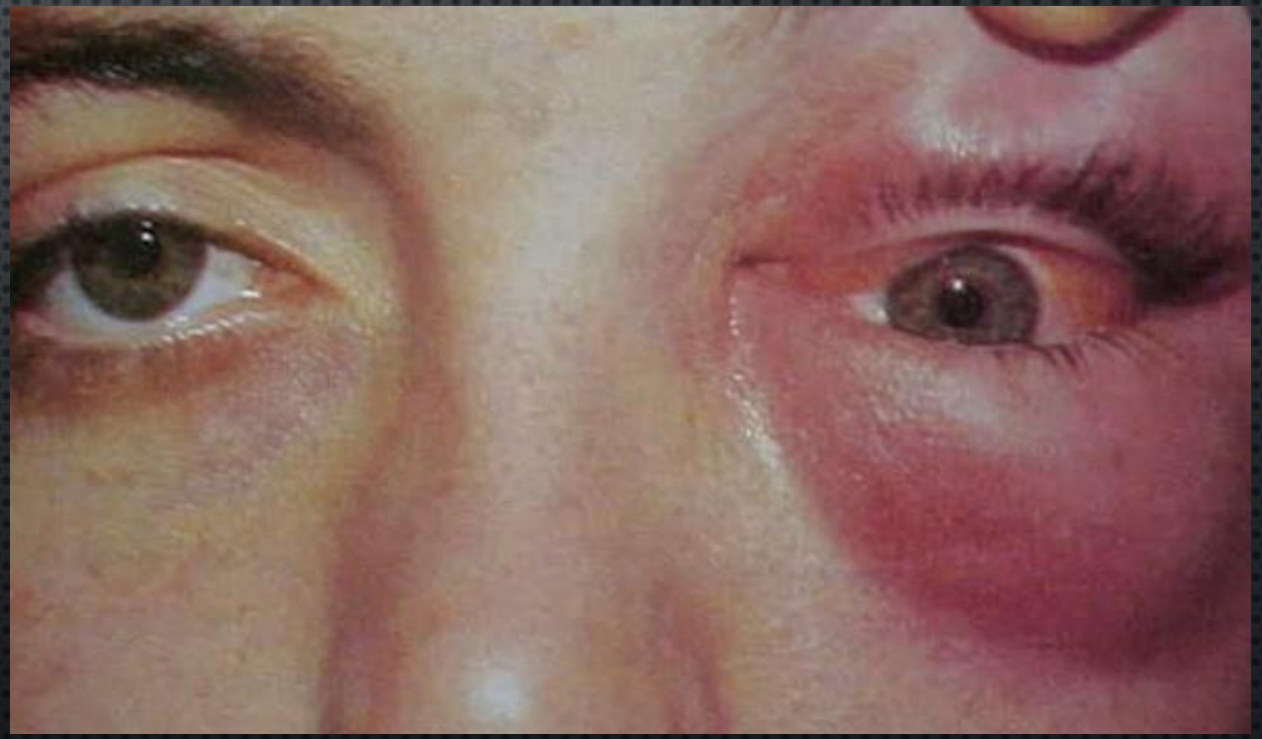
EXAM FINDINGS

SEEING RED: EXTERNAL STRUCTURES
PERI-ORBITAL/ORBITAL CELLULITIS

- WHY'S THE RED?
  - BACTERIAL INFECTION FROM SINUSES, OCCUPIES ASSOCIATED TISSUES (STAPHYLOCOCCUS/STREPTOCOCCUS)
- HOW BAD IS IT?
  - SERIOUS IMPLICATIONS, ESPECIALLY IF ORBITAL CELLULITIS (RISK OF CAVERNOUS THROMBOSIS)

SEEING RED: EXTERNAL STRUCTURES
PERI-ORBITAL/ORBITAL CELLULITIS

- UNIQUE EXAM FINDINGS:
  - CHEMOSIS
  - PROPTOSIS
  - PAINFUL/IMPAIRED EOM'S



https://healthool.com/wp-content/uploads/2015

SEEING RED: EXTERNAL STRUCTURES
PERI-ORBITAL/ORBITAL CELLULITIS

- Diagnosis/treatment:
  - Enhanced ct facial structures, cbc, esr, blood cultures
  - Admission: iv antibiotics, consultations with ophthalmology, ent, neurology

OCULAR EMERGENCY!!!

SEEING RED: CONJUNCTIVA
SUBCONJUNCTIVAL HEMORRHAGE

- WHAT'S THE RED?
  - BRIGHT-RED BLOOD ACCUMULATING OVER THE WHITE OF THE EYE/BETWEEN THE SCLERA AND BULBAR CONJUNCTIVA

EXAM FINDINGS

SEEING RED: CONJUNCTIVA
SUBCONJUNCTIVAL HEMORRHAGE

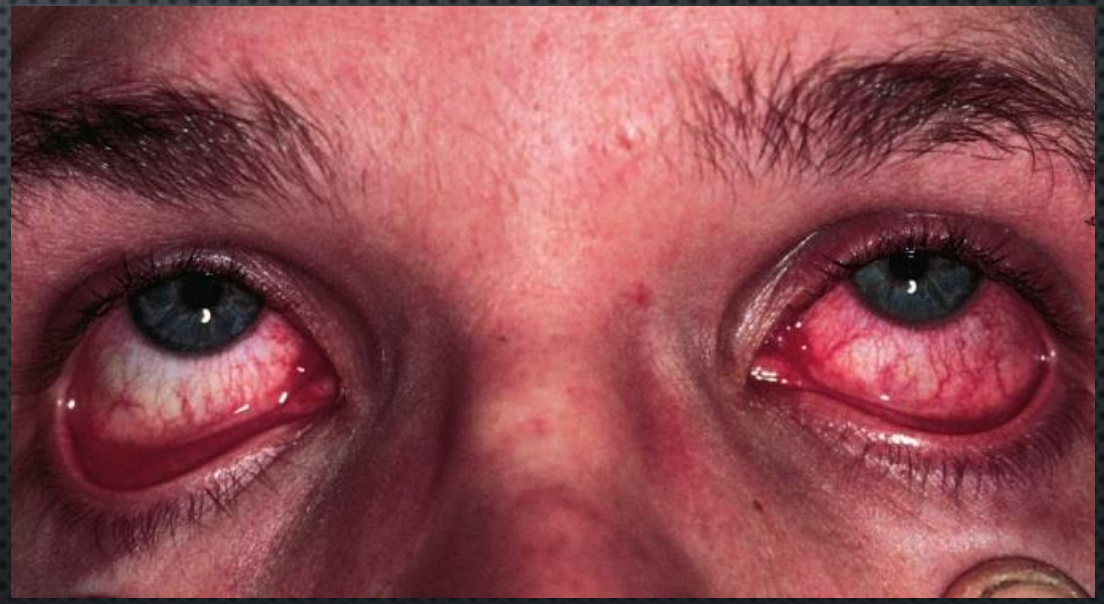
- WHY'S THE RED?
  - INCREASE OF PRESSURE CAUSES RUPTURE OF SMALL CAPILLARIES OF SCLERA, ACCUMULATION OF BLOOD ALONG THE WHITE OF THE EYE; NO ASSOCIATED PAIN
- HOW BAD IS IT?
  - MINOR ISSUE, UNSIGHTLY, BUT MAY FRIGHTEN PATIENT

SEEING RED: CONJUNCTIVA
SUBCONJUNCTIVAL HEMORRHAGE

- Treatment:
  - No intervention needed/spontaneous resolution
  - Educate patient: blood have appearance of "spreading" in a dependent manner

SEEING RED: CONJUNCTIVA
CONJUNCTIVITIS

- WHAT'S THE RED?
  - INFLAMMATION OF BULBAR CONJUNCTIVA, RANGING FROM MINIMAL INJECTION TO DIFFUSE ERYTHEMA



EXAM FINDINGS

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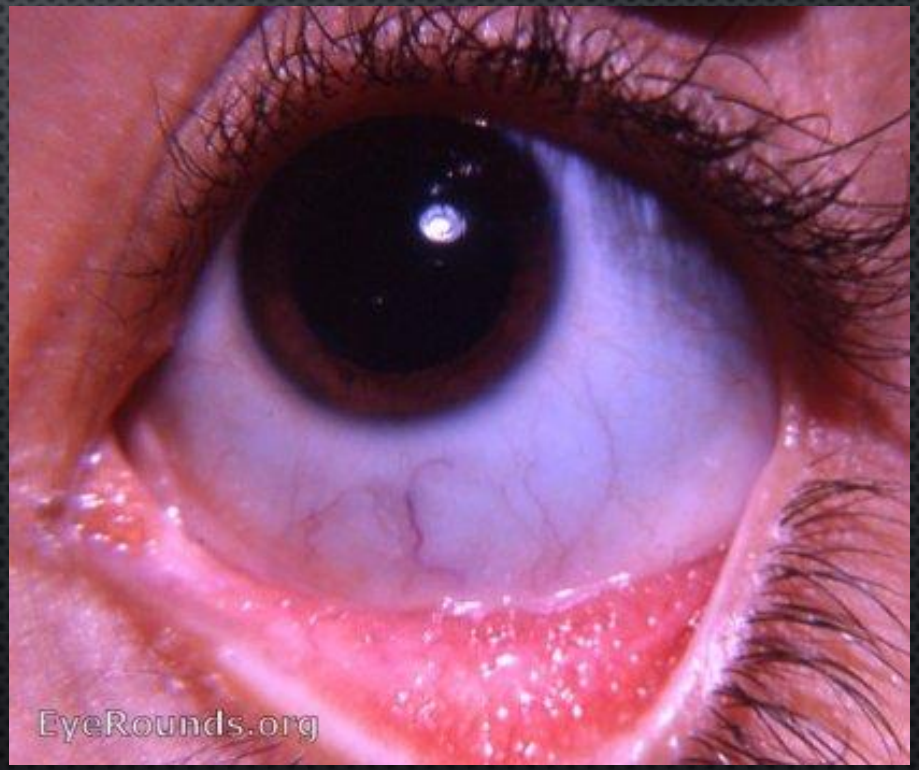
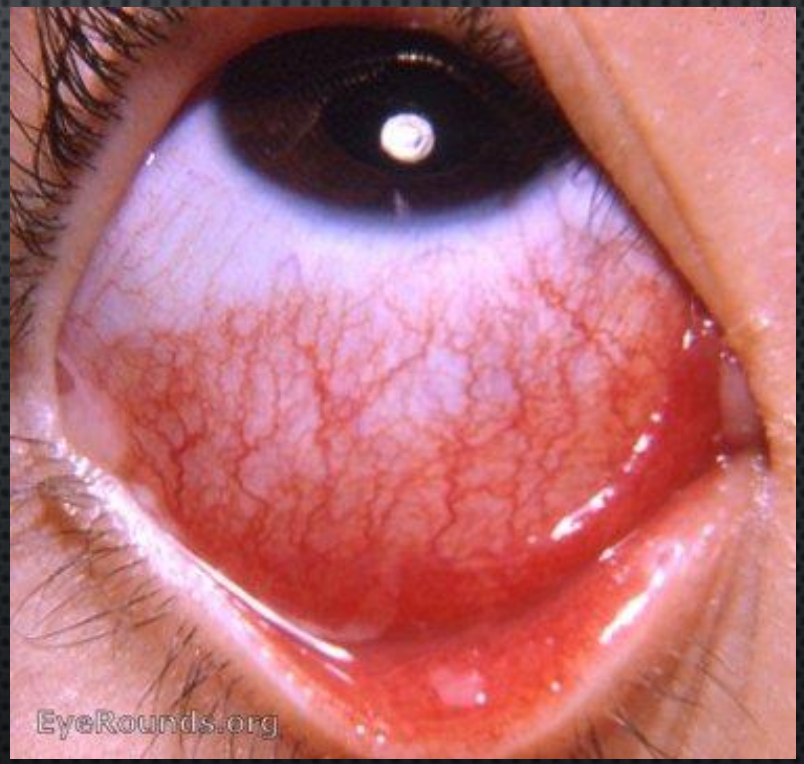
SEEING RED: CONJUNCTIVA **CONJUNCTIVITIS**

- WHY'S THE RED?
  - INFECTIOUS VERSUS ALLERGIC
  - VIRAL (ADENOVIRUS)>>>BACTERIAL
  - DIFFUSE INJECTION VS LIMBAL SPARING
  - CONTACTS? CONSIDER PSEUDOMONAS



SEEING RED: CONJUNCTIVA
CONJUNCTIVITIS

- How bad is it?
  - Usually self-limited "eye cold," spontaneous resolution
  - Occasional bacterial, caution with contacts: ulceration? Hypopyon?



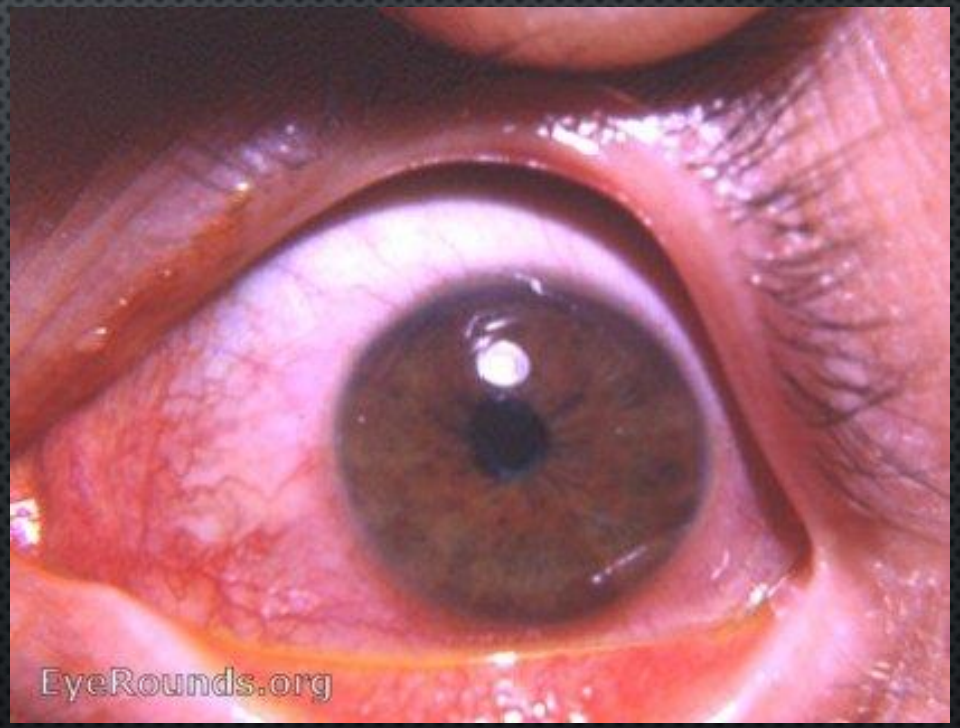
SEEING RED: CONJUNCTIVA

CONJUNCTIVITIS

- Treatment: compresses, hygiene
- Allergic: oral/topical antihistamines [loratadine (Claritin)/ketotifen (xatidor)]
- Viral: supportive
- Bacterial:
  - Topical antibiotics (tobrex, polymycin)
  - Quinolones for pseudomonas if contact lens user (ciloxan, ofloxacin)

SEEING RED: CORNEA

- WHAT'S THE RED?
  - CORNEA NOT RED! CORNEAL EPITHELIAL CELLS LACK VASCULATURE
  - CORNEAL INFLAMMATION PROMPTS INJECTION OF ADJACENT CONJUNCTIVA
  - FOCAL LIMBUS: POINT TO PROBLEM



EXAM FINDINGS

SEEING RED: CORNEA
HOST OF REASONS…

- WHY'S THE RED?
  - INITIAL EXAM SUGGESTIVE OF CONJUNCTIVITIS (REDNESS, TEARING, PHOTOPHOBIA)
  - WHEN THINKING CORNEA: FLUORESCEIN STAIN AND WOODS LAMP
  - CONSIDER TETRACAINE DROPS: PATIENT COMFORT/BETTER EXAM

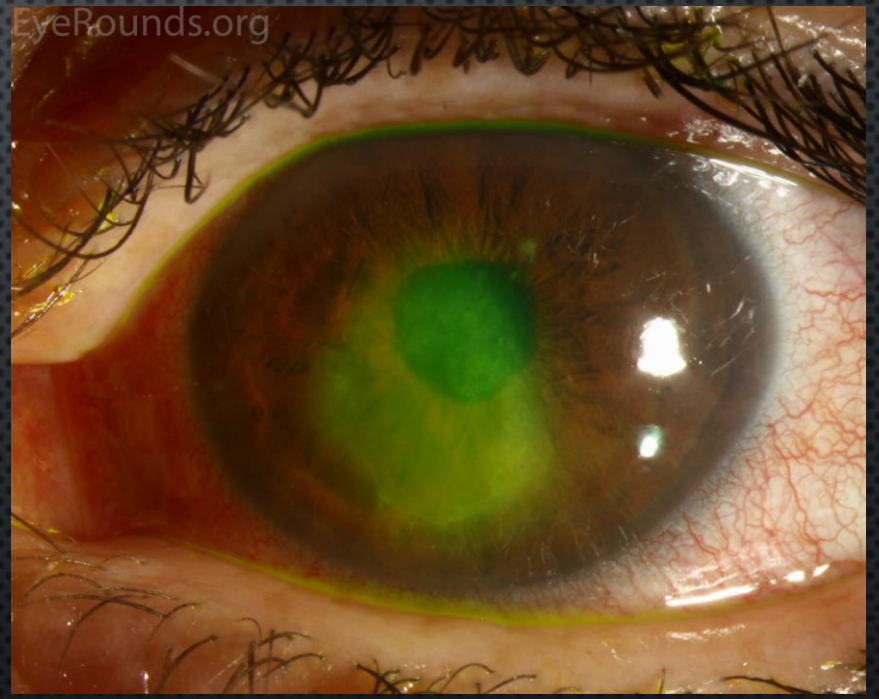
SEEING RED: CORNEA
CORNEAL ABRASION

- WHAT? SCRATCHING OF CORNEAL SURFACE
- WHY? TRAUMA
- UNIQUE EXAM:

INCREASED UPTAKE OF FLUOROSCEIN NOTED WITH LAMP, ABSORBS INTO INJURED EPITHELIAL CELLS

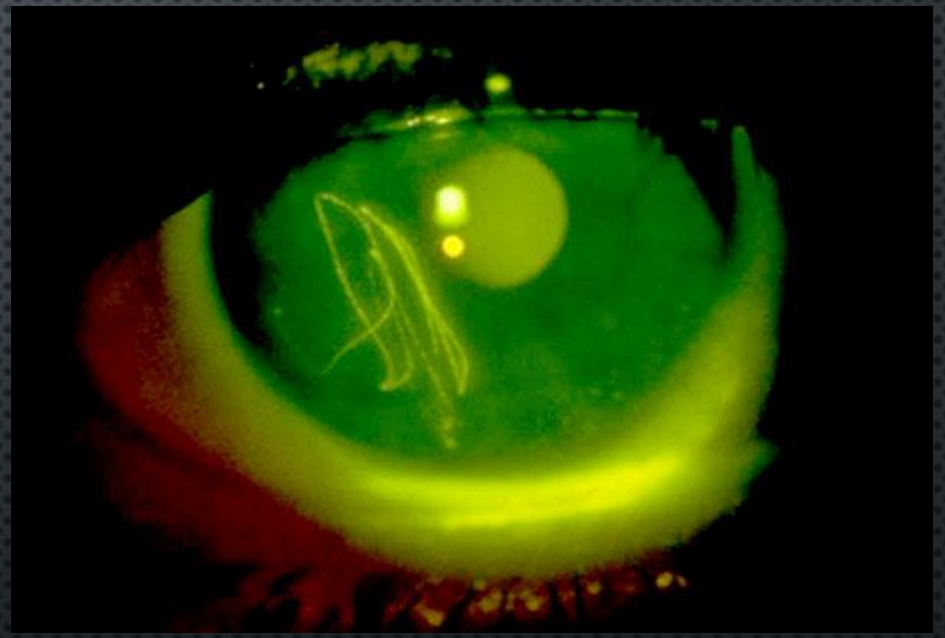
SEEING RED: CORNEA
CORNEAL ABRASION

- How bad is it?
  - Depends on extent and location of injury
  - Always document acuity!



SEEING RED: CORNEA
CORNEAL ABRASION

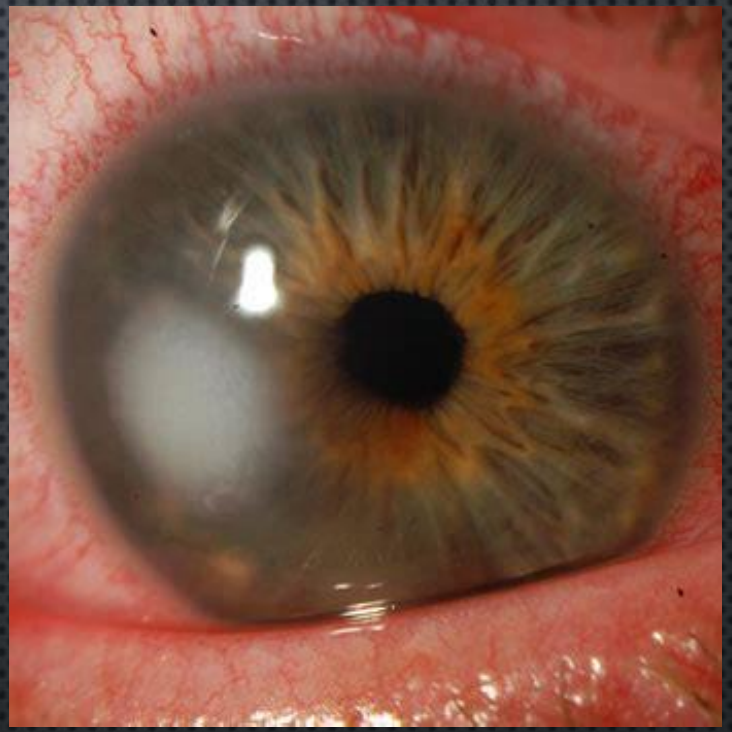
- TREATMENT/PLAN
  - CONSIDER TETANUS STATUS
  - EMPIRIC ANTIBIOTIC DROPS
  - OPHTHALMOLOGIC REFERRAL



www.anatomybox.com/wp-content/

SEEING RED: CORNEA **ULCERATION**

- WHAT? ULCERATION OF CELLS
- WHY? LIKELY PSEUDOMONAS
- UNIQUE EXAM:



https://www.eyecenters.com/wp-content

WELL CIRCUMSCRIBED OPACITY, TYPICALLY SEEN WITH WHITE LIGHT, ENHANCED WITH STAIN AND WOODS LAMP

SEEING RED: CORNEA

ULCERATION: OCULAR EMERGENCY

- How bad is it?
  - potential scarring/impairment of vision if central visual axis
- Treatment
  - Quinolones, prefer 4TH generation [gatifloxacin (zymar)/moxifloxacin (vigamox)]
  - Consult and refer to ophthalmology

SEEING RED: CORNEA
HERPETIC INFECTION

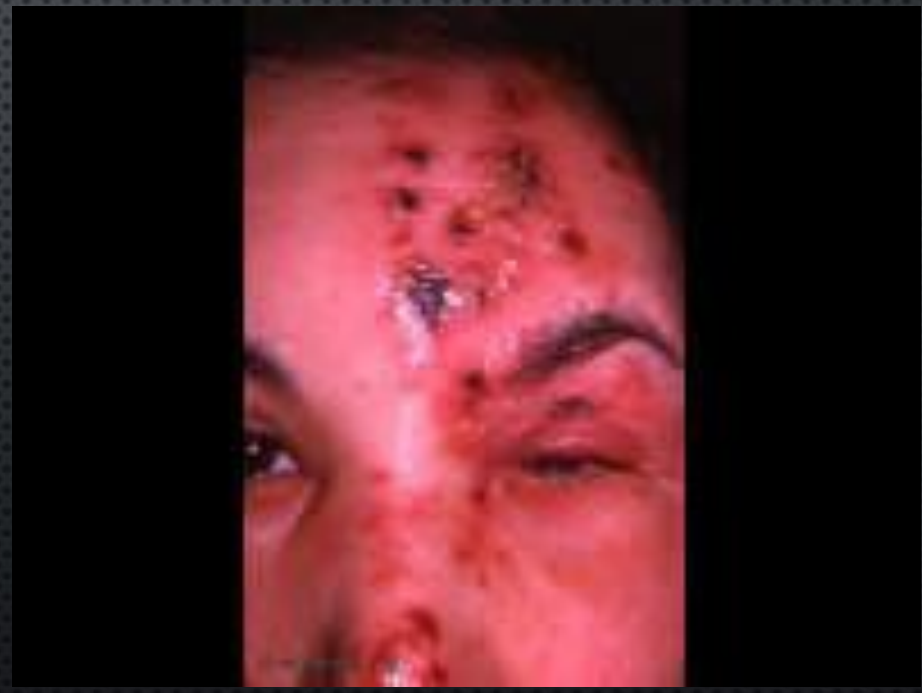
- WHAT? DENDRITIC LESIONS OF CORNEA
- WHY? INFECTION FROM HSV OR HERPES ZOSTER
- UNIQUE EXAM:

HSV: TREE-BRANCH LESIONS, NOTED ONLY WITH STAIN AND WOODS LAMP

HERPES ZOSTER: FACIAL RASH, FLARE AND CELL OF ANTERIOR CHAMBER/SLIT LAMP EXAM

SEEING RED: CORNEA
HERPETIC INFECTION

HERPES SIMPLEX VIRUS



HERPES ZOSTER/SHINGLES

SEEING RED: CORNEA
HERPETIC INFECTION: OCULAR EMERGENCY

- How bad is it?
  - Potential for central scarring/impaired acuity
- Treatment/plan:
  - Oral and topical antivirals
  - Valcyclovir (vatrex) or famciclovir (famvir)
    - Trifluridine (viroptic) eye drops
  - Ophthalmology consult and referral

SEEING RED: ANTERIOR CHAMBER

HYPHEMA

- WHAT'S THE RED?
  - ACCUMULATION OF BLOOD IN THE ANTERIOR CHAMBER
  - FLUID LEVEL NOTED WITH PATIENT IN UPRIGHT/DEPENDENT POSITION

EXAM FINDINGS

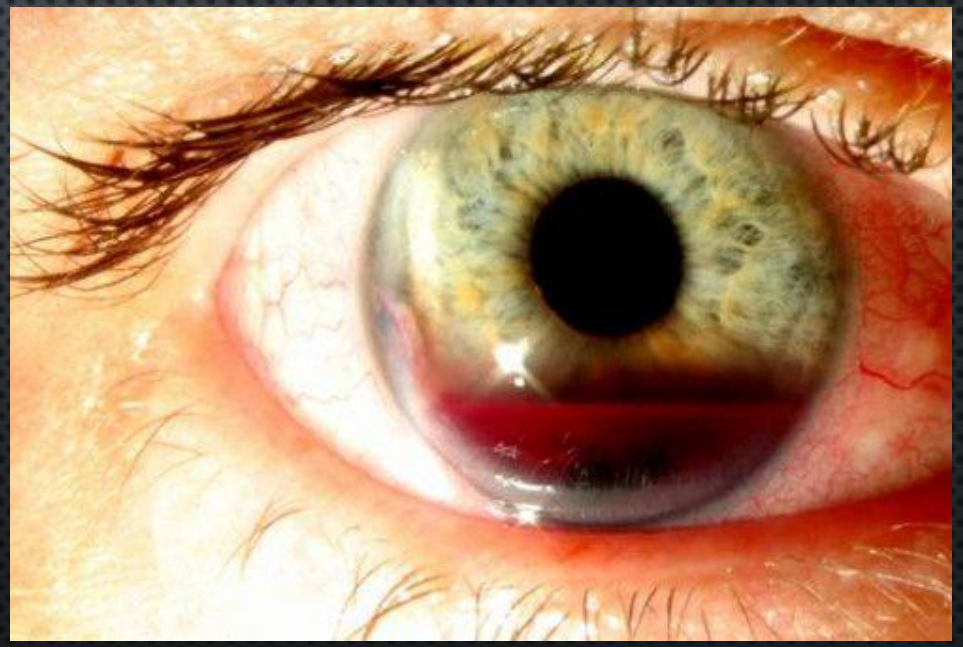
https://i.pinimg.com/736x/14/42/68/1442683a7e6b2266a309c9cf8f473c6b--red-blood-cells-med-school.jpg

Seeing Red: Anterior Chamber **Hyphema**

- Why's the red?
  - Bleeding from the ciliary muscles, usually after trauma
- How bad is it?
  - Can be spontaneous/consider INR if applicable

SEEING RED: ANTERIOR CHAMBER **HYPHEMA**

- Treatment?
  - Rest, avoid heavy lifting
  - Pt/inr
  - May rebleed
  - Ophthalmology referral



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SEEING RED: MIDDLE EYE
ANTERIOR UVEITIS

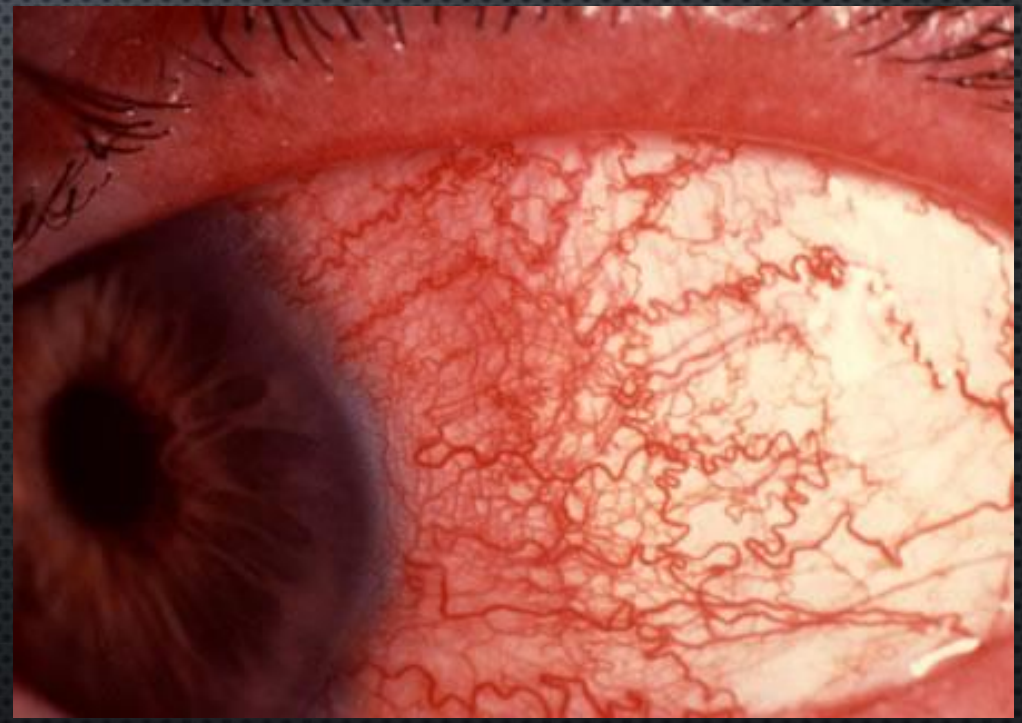
- WHAT'S THE RED?
  - INFLAMMATION/INJECTION OF VESSELS SURROUNDING THE IRIS/LIMBUS
  - CILIARY SPASM: PAIN WITH DIRECT AND CONSENSUAL LIGHT

EXAM FINDINGS

https://static1.squarespace.com

SEEING RED: MIDDLE EYE
ANTERIOR UVEITIS

- REMEMBER THE ANATOMY!!
  - UVEA IS THE MIDDLE EYE, COMPRISED OF THE IRIS, CILIARY BODY AND CHOROID



www.eyesurgeryinberkshire.co

SEEING RED: MIDDLE EYE
ANTERIOR UVEITIS

- Why's the red?
  - Host of pathology, sometimes idiopathic, may be viral
  - Always must consider other etiologies/autoimmune (ankylosing spondylitis, Reiter's syndrome, sarcoidosis, rheumatoid arthritis, SLE)

SEEING RED: MIDDLE EYE
ANTERIOR UVEITIS

- How bad is it?
  - May be self-limited
  - Consider other underlying source/implications
- Diagnosis/treatment?
  - Supportive, ophthalmologic referral
  - Consider the source: ANA, ESR, CRP

SEEING STRAIGHT

- SHOULD ANTICIPATE WIDE SPECTRUM OF RED EYES, PRESENTATIONS AND IMPLICATIONS
- CARE CAN BE SUCCESSFULLY MANAGED/INITIATED BY PHYSICIAN ASSISTANT IN ANY SETTING
- RED EYES LEAVE NO SURPRISE WHEN CONFIDENT IN OCULAR MEDICINE!

RESOURCES

**** IMAGES LABELED "EYEROUNDS.ORG," UNIVERSITY OF IOWA, PRESENTED WITH PERMISSIONS FROM DR. THOMAS OETTING**

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THANK-YOU!!

- Tara McSwigan, mpas, pa-c
- mcswigan1977@gmail.com