Diagnosis and Management of Anterior Segment Conditions for the Primary Care Optometrist

Christina Morettin, OD, FAAO

Introduction

- Illinois College of Optometry
  - Assistant Professor
- Illinois Eye Institute
  - Chief, Urgent Eye Care
- Questions?
  - cmorettin@ico.edu

Goals of Our 2 Hours Together...

- Common (and a few not-so-common) anterior segment conditions
  - Work anterior to posterior
  - From eyelids to anterior chamber!
- Learn a few pearls about managing the anterior segment
- Clinical updates and new products that can be used
- Important info!

Eyelid Lesions
CASE #1

- 32 y/o Indian male
- CC: Red eye with diffuse eyelid swelling and pain x 4 days
  - Has been doing warm compresses bid x 5min; no relief
  - (-) h/o trauma
  - (+) pain today 7/10
  - (-) photophobia
  - (-) blurred vision
  - (-) discharge from eye
- Ocular history: 2009 Cook County - had chalazion removal OS
- Medical history: unremarkable

CASE #1

- Representative photo

CASE #1

- **Diagnosis:** Internal hordeolum with associated preseptal cellulitis OD
- **Treatment:**
  - Keflex 500mg po bid
  - Warm compresses at least 10 min tid
  - Artificial tears qid
- **1 week follow-up:** resolved
  - Consider oral doxycycline for moderate MGD...

Preseptal Cellulitis

- **Orbital septum**
  - Tough, fibrous structure which can limit the spread of infection from skin and subcutaneous tissues and entering the orbit proper
- **Most common cause:** *Staphylococcus aureus* or *Streptococcus pyogenes*
  - From: meibomian glands, skin, nasolacrimal sac, sinusitis
Preseptal Cellulitis

**Symptoms:**
- Pain, swelling, tenderness, redness of lid
- Acute over matter of days

**Signs:**
- Red, tender, hot edematous lid
- (-) change in BCVA
- Full EOMS, (-) diplopia
- (-) conjunctival hyperemia
- (-) conjunctival congestion
- (-) proptosis
- (-) fever

**Treatment:**
- Oral antibiotics

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First-line antibiotics in Eye Care

**First line:**
- Keflex (cephalexin) 500mg bid x 7-10d
  - Class: 1st generation cephalosporin
  - Pregnancy category: B
  - Contraindications: Penicillin allergy (1-10% cross sensitivity), cephalosporin allergy
- Augmentin (amoxicillin-clavulanic acid) 500-875mg bid x 7-10d
  - Class: Penicillin
  - Pregnancy category: B
  - Contraindications: Penicillin or cephalosporin allergy

...What if allergic to penicillins?
- 2nd or 3rd generation cephalosporins
- Azithromycin (or another macrolide)
- Bactrim/Sepra
- Fluoroquinolones
- Doxycycline

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Preseptal Cellulitis: Treatment

**First line:**
- Zithromax (azithromycin) as Z-pak → 2, 250mg x 1d, then 250mg qd x 4d
  - Macrolide
- Bactrim (trimethoprim/sulfamethaxazole) 1 DS tab bid x 7d
  - Dihydrofolate Reductase Inhibitor and Sulfonamide
- Levaquin (levofloxacin) 500mg qd x 7 days
  - Fluoroquinolone
  - Increased risk of tendinitis/tendon rupture, risk increases with age and oral steroid use
  - Avoid if <18 years old, caution >60 years old

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Safe for children and pregnant women

Some reserve Augmentin for more severe infections

Good option for MRSA

Relatively safe "go-to" agents for most soft tissue infections
Antibiotic Miscellaneous Information

• May cause vaginal yeast infections/thrush
  — Can take doses with yogurt to help

• Signs/symptoms of allergic reaction:
  — Skin rash, hives, itching
  — Wheezing, trouble breathing
  — Swelling of lips, throat, face
  — Nausea, vomiting, diarrhea
  — D/C IMMEDIATELY → SEVERE TO ER

Antibiotics and Birth Control

• Controversial on birth control effectiveness
• Proven to decrease effectiveness
  — Rifampin and rifabutin (not Rx’ed)
• Tetracycline and penicillin derivatives may decrease effectiveness
• Educate → recommend back up method

Orbital Cellulitis

• Can be life threatening once infection spreads behind the orbital septum
  — Can spread to meninges

• Most commonly from adjacent sinuses
  — Also: preseptal cellulitis, dacryocystitis, dacryoadenitis, orbital floor fracture

Orbital Cellulitis

<table>
<thead>
<tr>
<th>Symptoms:</th>
<th>Signs:</th>
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</thead>
<tbody>
<tr>
<td>Pain, swelling, tenderness,</td>
<td>Red, tender, hot edematous lid</td>
</tr>
<tr>
<td>redness of lid</td>
<td>(+) fever</td>
</tr>
<tr>
<td>Acute over matter of days</td>
<td>(+/-) change in BCVA</td>
</tr>
<tr>
<td>(+) general malaise</td>
<td>Secondary to ON involvement</td>
</tr>
<tr>
<td></td>
<td>(+/-) diplopia and pain on EOMs</td>
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<tr>
<td></td>
<td>(+/-) proptosis</td>
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<td></td>
<td>(+/-) conjunctival chemosis</td>
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</tbody>
</table>
Orbital Cellulitis: Treatment/Referral

- Emergent referral to Emergency Department
  - Multidisciplinary team (ENT, microbiology, pediatrics, if required)
- Patient requires:
  - Immediate IV antibiotics
  - May require surgical intervention if older and unresponsive to treatment
  - CT scan of orbits and brain
  - ENT referral
  - Sinus disease most common cause

Preseptal vs Orbital Cellulitis: Pearls

- Differentiated by orbital septum:
  - Preseptal cellulitis: infection anterior to orbital septum
  - Orbital cellulitis: infection posterior to the orbital septum
- Etiology:
  - Preseptal cellulitis: local facial or eyelid injuries, insect or animal bites, conjunctivitis, hordeolum, and chalazion
  - Orbital cellulitis: ethmoid or frontal sinusitis
- Orbital cellulitis is likely if there is decreased ocular motility, pain with eye movements, proptosis, or decreased visual acuity

Squamous Cell Papilloma (viral wart)

- Benign epithelial hyperplasia
- One of the most common eyelid tumors
- Clinical Characteristics:
  - Benign, painless, and carries little to no risk for growth into cancer
  - Solitary or multiple
  - Smooth or rough
- Management:
  - Observation
  - Surgical removal for large size or cosmesis

Note: A papillomatous lesion is not always a papilloma

Handy to have a thermometer in the office!
Actinic Keratosis

- **PRE-MALIGNANT**
  - Most common pre-cancerous skin lesion
- May give rise to squamous cell carcinoma, SCC (20%)
- If so, these are generally non-invasive EXCEPT when they occur on the lip!
- Rare < 30 years old

*If you see it, ask about it! May require referral to dermatology*

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Squamous Cell Carcinoma

- **SCC** is second most frequent skin cancer (after BCC)
  - Malignant tumor of epithelial cells
- Fair skinned elderly individuals
  - Often caused by UV or HPV infection
- Can arise de novo or from premalignant lesions i.e. actinic keratosis
- Unlike BCC, SCC is AGGRESSIVE
  - Can invade orbit
  - Can metastasize to lymph nodes and distant sites
Squamous Cell Carcinoma

Clinical Characteristics:
- Plaques or nodules
- Varying degree of scale, crust, ulceration or keratinization

Basal Cell Carcinoma

- Most common eyelid malignancy ~95% eyelid tumors
  - More frequently on lower eyelid
- More common in sun-exposed areas (face & neck)
- Originate from basal keratinocyte
- Slow growing
- Locally invasive, but does not metastasize

Squamous Cell Carcinoma

Note asymmetry and lack of rounded dome appearance
“Greasy” centered lesions

Basal Cell Carcinoma

General Clinical Characteristics:
- Non-healing ulcer that bleeds for months or years
- Smooth plaque; can look like a scar
- Most: firm, immobile, painless, shiny nodule with raised pearly border and fine telangiectatic vessels

Nodular BCC:
- Most common
- Begins as small papule with fine telangiectasia
- Frequently, central necrosis with a small ulcer and adherent crust
Basal Cell Carcinoma

**Cystic BCC:**
- Become tense and translucent
- Cystic space histopathology

**Morpheaform (sclerosing) BCC:**
- Easily missed
- Shiny, smooth, tends to contract
- Likely deep into the dermis
- Difficult to remove
- Poorly defined borders
- *can be mistaken as bleph*

Basal Cell Carcinoma

Interrupts lash line with local invasion

BCC vs SCC

- **BCC:** crater ulcerated and moist, with hemorrhage and translucent border
- **SCC:** central crater dry, filled with brown-yellow, scaly, greasy keratin

When assessing lid lesions...
**look at the alteration of the lash-line**

If the lash line is altered → high suspicion for malignancy
Dry Eye Disease

- The most common condition that primary eye care providers encounter in daily practice
- In 2007, International Dry Eye WorkShop (DEWS) definition:
  - “A multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface”

- Our goal: Determine the etiology of dry eye disease and treat appropriately

Dry Eye Work-up: Careful Case History

- Medications
  - Antihistamines i.e. Benadryl (diphenhydramine)
  - Vitamin A analog i.e. isotretinoin
  - Beta-blockers i.e. metropolol
  - Antidepressants i.e. amitriptyline
  - Sleep aids i.e. trazadone
  - Hormone therapies i.e. birth control
  - Chemotherapeutic i.e. methotrexate

- Climate
  - Low humidity

- Extensive visual tasking
  - Decreased blink rate

- Aging
- Nutrition
  - Omega 6>3 risk factor

- Contact lenses

Dry Eye Work-up: Careful Case History

- Systemic conditions:
  - Diabetes
  - Sjogren Syndrome
  - Rheumatoid arthritis (~70% have dry eye)
  - Systemic lupus erythematosus (~57% have dry eye)
  - Thyroid eye disease
  - Inflammatory conditions:
    - Irritable bowel syndrome, IBS (~22% have dry eye)
  - Dermatological conditions:
    - Rosacea
    - Psoriasis

These 3 are the most common causes of aqueous deficient dry eye

Dry Eye Work-up: Diagnostic Testing

- Fluorescein staining
  - TBUT: Healthy >10 seconds
  - Assess corneal integrity: Corneal staining
- Lissamine Green/Rose Benga staining
  - Dead and devitalized cells on the cornea and conjunctiva
- Schirmer testing (Type I, without anesthetic)
  - Aqueous production
  - Healthy: >10mm in 5 minutes, Autoimmune: <5mm in 5 minutes
- Phenol red thread test
  - Alternative to Schrimer (but more $$$)
  - Healthy: >10mm in 15 seconds
Dry Eye Work-up: Diagnostic Testing

- Look at the eyelids...
- Blepharitis
- Complete vs incomplete blink

Dry Eye Work-up: Diagnostic Testing

- Korb-Blackie light test
  - Place the transilluminator at the lid crease and then evaluate the lash margin, looking for light to spill out, indicating inadequate lid closure

Dry Eye: Treatment

- Environmental modifications i.e. humidifier
  - Moisture-chamber glasses/goggles → Tranquileyes (EyeEco)
- Hydration: 6-8 glasses of water/day
- Omega 3 supplements (1,000mg to 2,000mg/day)
  - EPA to DHA ratio (3:2)
  - Decrease inflammation, stimulate tear production and thin meibum
- Bandage contact lenses: soft or sclerals
- Punctal plugs
- Treat the eyelids:
  - Anterior blepharitis → eyelid scrubs
  - Posterior blepharitis → warm compresses, omega 3’s, Azasite, oral doxy

Dry Eye: Eye Drop Treatments

- Artificial tears: make a recommendation for your patient
  - Ointments at night
- Topical steroids
  - Pulse dose
  - Lotemax qid OU x 2-4 weeks
- Restasis (cyclosporine), FDA approved for dry eye
  - See results at month 4-6, may start with Lotemax pulse dose
  - Long-term treatment
- Azasite (azithromycin)
  - Off-label use for MGD
**Eyelid disease**

- Lid disease is a common cause of evaporative dry eye

**Demodex**

- Demodex is a genus of tiny parasitic mites that live in/around hair follicles
- Two species known in humans
  - *Demodex folliculorum* → anterior blepharitis
  - *Demodex brevis* → posterior blepharitis
- Demodex infestation increases with age
  - 84% of the population at age 60
  - 100% percent of the population older than 70
- Can be found in asymptomatic patients
  - Commonly overlooked until patients are very symptomatic!

 Patients with rosacea are allergic to bacillus in the *Demodex organism*
Demodex

**Symptoms:**
- Itching
- Burning
- Foreign body sensation
- Crusting
- Redness of lid margin
- Intermittent and fluctuating blurry vision
- Watery discharge

**Signs:**
- Cylindrical dandruff
- Disorders of the eyelashes — Incl. madarosis
- Lid margin inflammation — Thickened, red
- MGD
- Blepharoconjunctivitis
- Blepharokeratitis

Pathognomonic for Demodex!


Demodex: How do we find it?

- On the eyelid or skin around the eye
- Won’t see it until you know how to look for it!
- Demodex live at the base of the lashes — Cannot pull them out — Need to tease them out
- Can confirm via microscope/patient education

Demodex: Demonstration

- Video

Demodex: Treatment

- Lifespan of the Demodex mite is short (approximately 19 to 23 days)
- They mate and continue to grow in number if you don’t remove them all

**First treatment: hygiene**
- Total body cleaning with regular shampoo or soap
  - Mites can spread from one area to another
  - Wash bedding at least once a week and put it through a hot dryer
- Pets can have their own mites
  - Unclear if pet mites transfer
  - Suggest not sleeping with pets
  - Artificial tears bid-q2h
**Demodex: Treatment**

- **Lid scrub with tea tree oil**
  - Daily lid scrub: 50% tea tree oil w massage & 5% tea tree oil ointment
- **Cliradex® wipes (4-Terpineol)**
  - Can order online
- **Cliradex® Complete Advanced Lid Hygiene Kit**
  - In-office treatment
- **Avenova® wipes** (hypochlorous acid)
  - First daily prescription lid hygiene treatment

**CASE #2**

- 27 y/o Caucasian female
- **CC**: Bilateral lid edema
  - Occurred once 3 years ago
  - Worked up for allergies, none noted with allergist
- Currently, Benadryl mildly resolving the edema

**Demodex: Treatment**

- **Ivermectin cream**
  - Once lids cleaned, rubbed into lashes overnight for 1 month

**CASE #2**

- **Anterior segment**:
  - Only remarkable finding: telangiectasia of lid margin
CASE #2

- **Diagnosis:** Ocular Rosacea
- **Treatment:**
  - Preservative free artificial tears qid OU
  - Azasite tid OU
- **1 week follow-up:**
  - Lid edema completely resolved
  - Refilled Rx for Azasite at pharmacy in case a flare-up should occur again

<table>
<thead>
<tr>
<th>Ocular Rosacea</th>
<th>Ocular Rosacea: Triggers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symptoms:</strong></td>
<td><strong>Spicy food</strong></td>
</tr>
<tr>
<td>• Non-specific irritation</td>
<td><strong>Smoking environment</strong></td>
</tr>
<tr>
<td>• Burning</td>
<td><strong>Alcohol</strong></td>
</tr>
<tr>
<td>• Tearing</td>
<td></td>
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<tr>
<td>• Lid edema</td>
<td></td>
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<tr>
<td></td>
<td><strong>Signs:</strong></td>
</tr>
<tr>
<td></td>
<td>• Margin telangiectasia</td>
</tr>
<tr>
<td></td>
<td>• MGD</td>
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<tr>
<td></td>
<td>• Conjunctival hyperemia</td>
</tr>
<tr>
<td></td>
<td>• Corneal punctate erosions</td>
</tr>
<tr>
<td></td>
<td>• Corneal neovascularization</td>
</tr>
</tbody>
</table>
Ocular Rosacea: Treatment

- Warm compresses and lid hygiene with MGD
- Pulse dose soft-steroid
  - i.e. Lotemax qid x 7-14 days
- Azasite (1% azithromycin) drops bid
  - Can be expensive on some insurance plans
  - Off-label use
  - Can be used bid x 1m, then as needed
- Oral doxycycline 50 mg bid...may require long-term dosing

Conjunctiva

Review: Conjunctival Lymphatic Drainage

- Submandibular and preauricular lymph nodes
  - Node palpation during examination +/- tenderness
  - Nasal = submandibular
  - Lateral = preauricular

Important in viral conjunctivitis!

Review: Follicles vs Papillae

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Follicles</th>
<th>Papillae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood vessels</td>
<td>Avascular</td>
<td>Central blood vessel</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>Chlamydia, toxic, viral</td>
<td>Non-specific, allergic, bacterial</td>
</tr>
<tr>
<td>Acronym</td>
<td>“CTV”</td>
<td>“pABillae”</td>
</tr>
</tbody>
</table>
CASE #3

- 29 year old Caucasian male
- 6 days onset red, swollen right eye
- 5 days ago went to PCP
  - Was given oral Bactrim bid x 10 days
  - Worsened with treatment
- Today: general malaise, “I feel hot and clammy”
- BCVA:
  - OD: 20/40
  - OS: 20/20
- Entrance testing unremarkable

Bactrim
1. Sulfamethoxazole (sulfonamide)
2. Trimethoprim (Dihydrofolate Reductase Inhibitor)

CASE #3

Follicles:
- Chlamydia
  - Usually chronic
  - Treatment:
    - Azithromycin 1000mg single dose
    - Doxycycline 100mg BID for 7 days
    - Tetracycline 250mg QID x 7 days
    - Erythromycin 500 mg QID x 7 days
- Toxic
  - No h/o anything in eye
- Viral

CASE #3

Diagnosis: EKC (adenovirus conjunctivitis)

Treatment:
- Continue oral Bactrim 10 day course as indicated
  - Do not want to build resistance!
- Preservative free artificial tears q1h
- Lotemax qid

Education:
- Contagious
- Discussed hand washing and hygiene

(+ Result Control

Did not perform betadine wash as had been 6 days...
CASE #3

- 2 day follow-up... Comfort and lid edema improved
  - BCVA: 20/20 OD, OS
  - Adenoplus (-)

Presentation

2 day f/u

The most famous case of EKC...

Viral Conjunctivitis

- Typically caused by Adenovirus
  - Can last on inanimate surface up to 21 days
- Contagious!
- Rule out herpetic etiology
  - Periorbital lid vesicles
  - Corneal hypothesia
  - Corneal dendrites

He took the RED EYE flight home from Sochi...
**Viral Conjunctivitis**

- May patients present with punctate keratopathy, due to virus particles irritating corneal epithelium
  - Leads to photophobia
  - Occasionally have filaments
- Pseudomembrane
  - More significant inflammatory response
  - Likely EKC (epidemic keratoconjunctivitis)
    - Adenovirus types 8, 19
- Likely associated PAN (preauricular lymphadenopathy) +/- tenderness

**Viral Conjunctivitis: Treatment**

- **Palliative:**
  - Cool compresses
  - Preservative-free artificial tears q1h
- **Hygiene:**
  - Frequent hand-washing
  - Discard make-up
  - Decontaminate home/office by wiping down surfaces with a dilute bleach, changing sheets, using clean towels, etc.
  - Avoid wearing contact lenses while feeling discomfort, especially if the eyes remain red
  - Avoid close contact with others for at least 5-7 days

**AdenoPlus®**

- 90% Sensitivity
- 96% Specificity

**Viral Conjunctivitis: Treatment**

- **Topical steroids:**
  - Improve patient comfort and clinical findings when significant inflammatory response
  - Taper slowly to modulate the immune response prior to discontinuation
  - Ensure not herpetic!
- **Topical ganciclovir gel 0.15%**
  - One small study to tx adenoviral conjunctivitis with mixed results


**Viral Conjunctivitis: Treatment**

- **Betadine (povidone-iodine 5%)**
  - Reduce viral load
  - Very broad spectrum
  - High microbial kill rates and an effective anti-infective agent against *Fusarium, Candida, Mycobacterium tuberculosis*, as well as viruses
  - Off-label for management of adenoviral conjunctivitis/keratoconjunctivitis
  - Currently lack of well-controlled studies on the clinical effects of povidone-iodine mono-treatment on infected eyes
  - Gaining popularity within profession

**What's the buzz about Betadine about?**

**Betadine**

1. Instill topical anesthetic +/- topical NSAID
2. Instill 3-5 drops of Betadine (can rub some over eyelid margin)
3. Wait 60 seconds
   - Have patients close their eyelids and move their eyes around
4. Irrigate the eye copiously with sterile saline
5. Start topical steroid (if indicated) qid for 7-10 days to reduce any Betadine-induced inflammation

**CASE #4**

- 20 year old African American female
- CC: Irritated eyes x 1 month, no relief with artificial tears OU
- Ocular history: (+) colored CL since 2009, uses OptiFree solution
  - Reports compliance with CL hygiene, does not sleep in lenses
- BCVA: 20/20 OD, OS
- Entrance testing: Unremarkable

**Gross evaluation: unremarkable**
CASE #4

- **Diagnosis:** GPC
- **Treatment:**
  - D/C CL x 1 month
  - Lotemax qid OU
  - Patanol bid OU
  - Artificial tears qid OU
- **1 month follow-up:**
  - 1+ superior papillae
  - Change to daily disposables

Giant Papillary Conjunctivitis (GPC)

- Aka: Contact lens papillary conjunctivitis (CLPC)
- Related to mechanical trauma:
  - Contact lenses
  - Other ocular prostheses
- Two processes:
  - Immediate type 1, IgE-mediated hypersensitivity (mast cells)
  - Type IV delayed reaction (T cells)
    - Not a true allergy!
- Average blinking:
  - Young men: 9,600/day
  - Young women: 15,000/day

Symptoms:
- Redness
- Itching
- Increased mucus production
- Blurred vision with CL wear
- Excessive CL movement
- Reduced CL wear time

Signs:
- Giant superior palpebral conjunctival papillae

What is GIANT?
>1mm
GPC: Contact Lens Problems

1. Increased deposits on the lenses
2. Increased time per day that lenses are worn
3. Use of lenses consistently for months or years
4. Individual reactivity to wearing a particular lens type
5. Larger lens and therefore broader area of adhering antigenic material
6. Genetic constitution of the patient

GPC: Treatment

• **Goal:** Allow the GPC patient to continue wearing contact lenses or to tolerate an ocular prosthesis

• **Cleaning the CL:**
  - Soft CL: Hydrogen peroxide (Clear Care or PeroxiClear)
  - RGP or prosthetic: Progent (proteolytic enzyme) ~ once per week

• **New CL design:**
  - Soft CL: Daily disposable
  - RGP: Smaller, less surface area to hold deposits

**Episclera/Sclera**
Episcleritis

- Non-specific inflammatory condition of episcleral tissue
- Bulbar subconjunctival extension of Tenon’s capsule
- Two forms:
  - Diffuse
  - Nodular → associated more with systemic condition
- Most patients have no identifiable underlying systemic condition
  - Can be associated with:
    - Collagen vascular disease
    - Sarcoidosis
    - Rheumatoid arthritis
    - Inflammatory bowel disease
    - Herpes zoster infection
    - Gout
    - Syphilis

Recall will blanch with 2.5% phenylephrine

Perform extensive ROS and referral with recurrences

Episcleritis: Lab Tests to Consider

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<tr>
<th>Test</th>
<th>Abbreviation</th>
<th>Condition</th>
</tr>
</thead>
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<tr>
<td>Complete Blood Count</td>
<td>CBC</td>
<td></td>
</tr>
<tr>
<td>Erythrocyte sedimentation rate</td>
<td>ESR</td>
<td>Generalized inflammation</td>
</tr>
<tr>
<td>Fluorescent treponemal antibody absorption</td>
<td>FTA-ABS</td>
<td>Syphilis (active)</td>
</tr>
<tr>
<td>Reactive plasma reagent</td>
<td>RPR</td>
<td>Syphilis (screening)</td>
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<tr>
<td>Chest x-ray</td>
<td>CXR</td>
<td>TB, sarcoidosis</td>
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<tr>
<td>Purified protein derivative</td>
<td>PPD</td>
<td>TB</td>
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<tr>
<td>Angiotensin converting enzyme</td>
<td>ACE</td>
<td>Sarcoidosis</td>
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<tr>
<td>Rheumatoid factor</td>
<td>RF</td>
<td>Rheumatoid arthritis</td>
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<tr>
<td>Antinuclear antibodies</td>
<td>ANA</td>
<td>Systemic lupus erythematosus</td>
</tr>
<tr>
<td>Serum uric acid / Creatinine</td>
<td></td>
<td>Gout</td>
</tr>
</tbody>
</table>

Episcleritis: Treatment

- Self-limiting in 1-3 weeks
- Short course of topical steroids
  - Lotemax qid
  - Prednisolone acetate qid
  - Fluoromethalone (FML) qid
- May consider oral NSAID
CASE #5

- 82 y/o African American female
- CC: Red eye OD>OS x 3 weeks
- Ocular history: Aqueous deficient dry eye
- Medical history:
  - Rheumatoid arthritis: Discontinued oral prednisolone 3 weeks ago
- BCVA:
  - 20/70 OD, 20/50 OS
  - Stable, h/o cataract

CASE #5

- DFE unremarkable
- No T-sign

CASE #5

- **Diagnosis:** Diffuse anterior non-necrotizing scleritis
- **Treatment:**
  - Re-start 5mg oral prednisone bid PO, as indicated by PCP
  - Letter given to patient to bring to PCP: co-manage
- 2 day follow-up: resolving
- 1 week follow-up: eyes white and quiet
Scleritis

• Edema and cellular infiltration of the sclera
• Inflammation extends into the deep episcleral plexus
• Types:
  – Anterior vs Posterior
  – Anterior classifications:
    • Diffuse  \(\rightarrow\) widespread, most common
    • Nodular  \(\rightarrow\) localized inflammation with nodule
  – Necrotizing
    – With inflammation  \(\rightarrow\) usually associated with collagen vascular disorders
    – Without inflammation (scleromalacia perforans)  \(\rightarrow\) rare, no symptoms

Posterior Scleritis: B-scan

Classic “T-sign”

Scleritis

• > 50% associated with underlying systemic disease
  – Usually with significant morbidity and mortality
  – Systemic vasculitides
  – Connective tissue disorders
  – Arthritides

Gross Evaluation of Conjunctival Injection

Ensure to look at the injection without slit lamp first!
Scleritis

Symptoms:
- Severe deep, boring pain
  - Absent in scleromalacia perforans
- Pain often disturbs sleep and radiates to brow
- Tender globe

Signs:
- Vision may be affected (especially with posterior scleritis)
- Redness may be diffuse, focal
  - Absent in scleromalacia perforans
- Posterior scleritis
  - Choroidal folds, exudative RD, disc swelling, proptosis

Scleritis: Lab Tests to Consider

<table>
<thead>
<tr>
<th>Test</th>
<th>Abbreviation</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cytoplasmic antineutrophil cytoplasmic antibody</td>
<td>C-ANCA</td>
<td>Granulomatosis with polyangiitis aka Wegener’s granulomatosis</td>
</tr>
<tr>
<td>Perinuclear antineutrophil cytoplasmic antibody</td>
<td>P-ANCA</td>
<td>Vasculitis, polyarteritis nodosa</td>
</tr>
<tr>
<td>Enzyme-linked immunosorbent assay</td>
<td>ELISA</td>
<td>Lyme Disease</td>
</tr>
<tr>
<td>Western Blot</td>
<td></td>
<td>Lyme Disease</td>
</tr>
</tbody>
</table>

In addition to lab tests for episcleritis, as there is overlap in systemic etiology for both conditions

Scleritis: Treatment

- **Anterior scleritis**
  - Diffuse and nodular non-necrotizing
    - Oral NSAIDS
    - Oral steroids, if unresponsive to treatment
  - Anterior necrotizing or posterior scleritis
    - Oral or IV steroids
    - Cytotoxic agents (i.e. cyclophosphamide)
    - Immune modulators (i.e. cyclosporine or tacrolimus)
    - Tailored to patient: depends on severity and systemic disease

Refer or co-manage
Oral NSAIDs for OD’s

- Motrin, Advil (ibuprofen)
  - Episcleritis → 200-600mg po tid-qid
  - Scleritis, anterior non-necrotizing → 400-600mg po qid
  - Do not exceed 3200mg/day
- Aleve (naproxen sodium)
  - Episcleritis → 250-500mg po bid
  - Scleritis, anterior non-necrotizing → 250-500mg po bid
  - Do not exceed 1250mg/day
- Indocin (indomethacin)
  - Episcleritis → 25mg po bid
  - Scleritis, anterior non-necrotizing → 25mg po tid
  - Do no exceed 200mg/day

Contraindications:
- Allergy to aspirin
- Do not add if taking ASA
- Stomach ulcers or other GI problems
- Avoid in conditions of blood clotting disorders or ocular hemorrhaging
- Caution if decreased kidney function, CHF, cardiovascular disease

Side Effects:
- GI upset, bleeds and ulcers

Notes:
- Do not take with alcohol
- Take with food +/- antacid to decrease stomach upset/risk for stomach ulcers
- Avoid lying down ~30 min after taking meds

Thygeson’s Superficial Punctate Keratitis

- Bilateral, idiopathic
- Exacerbations and remissions

Symptoms:
- Recurrent attacks of irritation, photophobia and tearing

Signs:
- Course, distinct, granular, grey epithelial lesions
- Mild subepithelial haze
Thygeson’s SPK: Treatment

- **Artificial tears** (preservative-free) qid-q1h
- **Topical steroids**
  - Lotemax qid
  - Prednisolone acetate qid
  - Fluoromethalone (FML) qid
- **Off-label use of Restasis** (cyclosporine)
  - Alternative to steroids if longterm
- **Therapeutic bandage CL**

Therapeutic Bandage Contact Lenses

- FDA approved

<table>
<thead>
<tr>
<th>Lens</th>
<th>Manufacturer</th>
<th>Extended Wear</th>
<th>Dk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Optix N&amp;D</td>
<td>Alcon</td>
<td>30 days</td>
<td>140</td>
</tr>
<tr>
<td>PureVision</td>
<td>B&amp;L</td>
<td>30 days</td>
<td>99</td>
</tr>
<tr>
<td>Oasys</td>
<td>Vistakon</td>
<td>7 days</td>
<td>103</td>
</tr>
</tbody>
</table>

- Common Uses:
  - Corneal abrasions
  - Recurrent corneal erosions
  - Trichiasis
  - Filamentary keratitis
  - Post-PRK
  - Lagophthalmos
  - Exposed sutures

Therapeutic Bandage Contact Lenses

- Removal of BCL: Ensure to irrigate and “float-off” BCL with sterile saline or preservative free tears
  - Do not pull off new epithelium
- Removal of lens options:
  - Gently drag lens inferiorly and pinch off
  - Forceps to remove at slit lamp
  - Cotton-tip applicator to slide lens off eye temporally
- Avoid topical anesthetic
  - You want patient to tell you how the eye feels after the BCL is removed

Getting reimbursed:

1. Bill the **office visit** at the appropriate level (92xxx or 99xxx) if performed and recorded.
2. Bill for the **fitting of the contact lens** for the treatment of the ocular surface disease (CPT 92071)
   - Indicate eye (RT or LT)
3. Bill a **material fee** as well. Choose either:
   - CPT 99070
   - V2523

**NOTE:** Cannot bill for a non-revenue lens (trial or diagnostic)
Phlyctenule

- Type IV hypersensitivity reaction to microbial antigens
  - Most commonly *Staphylococcus aureus*
- Commonly in children and young adults

**Clinical Characteristics:**
- Single/multiple grey-yellow elevated inflammatory lesions
- Limbus or conjunctiva
- Surrounded by intense injection

**Symptoms:**
- Watery eyes
- Redness
- Photophobia
- Recurrences common

**Signs:**
- Single/multiple grey-yellow elevated inflammatory lesions
- Limbus or conjunctiva
- Surrounded by intense injection
- Lesion may ulcerate, and can heal over a few weeks
- Heals with vascularization

**Phlyctenule: Treatment**

- **Artificial tears** (preservative-free) qid-q1h
- Short course of **topical combo (steroid/antibiotic)**
  - Mild: Tobradex qid x 7d
  - More severe: prednisolone acetate q2-q4h with Moxeza bid-tid
- **Treat the blepharitis!**
  - Lid hygiene and warm compresses
  - Can rub Tobradex into lid margin bid
  - Doxycycline 50mg bid x 1m, 50mg qd 2-3m

**Phlyctenule Keratoconjunctivitis**

*Before* and *After* images of eye surgery.
CASE #6

- 86 y/o Caucasian female
- Was currently treating her for herpes zoster uveitis with Pred Forte q2h OD
- Physician directed follow-up: “I hit my eye with the bottle!”
- BCVA:
  - 20/60 OD, 20/20 OS

• Large corneal abrasion
• Corneal edema w/ corneal folds
• Sub-conjunctival hemorrhage nasally

CASE #6

- **Diagnosis:**
  1. Corneal abrasion
  2. Secondary corneal edema (from trauma)
  3. Subconjunctival hemorrhage (from trauma)

- **Treatment:**
  - BCL (Air Optix N&D BC8.6), w/1 gt cyclopleolate in office
  - Moxifloxacin q1h OD
  - Preservative free artificial tears q1h OD
**Corneal Abrasion**

**Symptoms:**
- Ocular pain
- Watery discharge
- Photophobia
- Blepharospasm

**Signs:**
- Corneal epithelial defect (+) NaFl staining
- (-) deeper corneal laceration
- (-) infiltrate, infection
- Can see folds in Decemet’s due to overhydration (no epithelium in place)

**Corneal Abrasion: Treatment**

- **Artificial tears** (preservative-free) qid-q1h
- **Topical prophylactic antibiotic**
  - *i.e.* PolyTrim qid
  - Consider broad spectrum antibiotic in CL wearers *i.e.* ofloxacin qid
- **Bandage contact lens**
- **Pressure patching**
  - *i.e.* young children
- **Topical cycloplegic** for pain can be used
  - *i.e.* homatropine bid
- **Follow-up daily until re-epithelialized**
Corneal Abrasion: ICD10

- Corneal abrasion without foreign body, initial encounter
  - Right eye: S05.01xA
  - Left eye: S05.02xA

- Corneal abrasion without foreign body, subsequent encounter
  - Right eye: S05.01xD
  - Left eye: S05.02xD

- Corneal abrasion without foreign body, sequela
  - Right eye: S05.01xS
  - Left eye: S05.02xS

Recurrent Corneal Erosions

- Repeated episodes of superficial spontaneous abrasions
- More common in the morning
- History of:
  - Epithelial basement membrane dystrophy (EBMD)
    - Aka map-dot-fingerprint
  - Initial corneal abrasion
  - Poor adhesion of the epithelium is thought to result from abnormalities of underlying basement membrane
    - i.e. hemidesmosomes

Epithelial Basement Membrane Dystrophy

Epithelial Basement Membrane Dystrophy

Negative corneal staining
Recurrent Corneal Erosions

Symptoms:
• Ocular pain
• Watery discharge
• Photophobia
• Blepharospasm
• Foreign body sensation
• Redness
• Usually upon awakening

Signs:
• Corneal epithelial defect (+) NaFl staining
• Can see epithelial microcysts and other signs of EBMD

Recurrent Corneal Erosions: Treatment

Acute phase:
• Treat as corneal abrasion
• May require epithelial debridement
• Prophylactic antibiotic, bandage CL, artificial tears (preservative-free)
• Cycloplegia for pain
• Oral NSAIDs for pain

Prophylaxis:
• Goal: Therapeutically facilitate effective formation of the anchoring complex of epithelium to the basement membrane

• This is attempted either through:
  – Protecting the corneal epithelium
  – Through reducing inflammation of the basement membrane
  – Through induction of scar-based adhesions from the epithelium to the anterior stroma

Prophylaxis, depending on severity:
• Artificial tears (preservative-free) qid-q1h
• Muro 128 ung qhs-qid
• Oral doxycycline 50mg bid x 1m, qd x 2-3m...
  – Reduces MMPs!
• Topical steroid i.e. Lotemax qid
• Long-term bandage CL, if indicated

Interventional options:
• Phototherapeutic keratectomy (PTK)
• Anterior stromal micropuncture

Matrix metalloproteinases (MMPs) are a family of enzymes that play a role in the remodeling degradation of connective tissue, including epithelial basement membrane
CASE #7

- 86 y/o Caucasian female
- CC: Redness and irritation of right eye/lid with associated facial lesions
  - Onset: this morning, however, has been having general malaise x 1 week
  - (-) fever
  - (+) mild photophobia
  - Pain, 7/10 (yesterday equivalent)

Pseudodendrites

(-) Hutchinson’s sign
CASE #7

- **Diagnosis:** Herpes Zoster Ophthalmicus
  - With pseudodendrites
  - With non-granulomatous anterior uveitis

- **Treatment:**
  - Valtrex 1,000mg po tid x 10 days
  - Erythromycin ung BID OD, cover skin lesions
  - Preservative free artificial tears q1h OD
  - Lotemax qid OD

- **1 month follow-up:** (±) post-herpetic neuralgia, managed by PCP

Day 1

Day 7

Resolving corneal lesions

Day 7

Day 15

Day 7

Day 15
Herpetic Eye Disease: Review

• HSV eye disease is a wide spectrum of clinical problems

• Ranging from dermatitis of the eyelid, blepharitis of the lid margin, conjunctivitis, epithelial keratitis, stromal keratitis and iritis
  – And that is just the anterior segment!

<table>
<thead>
<tr>
<th>Human herpes virus 1</th>
<th>Herpes simplex type 1 (HSV-1)</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human herpes virus 2</td>
<td>Herpes simplex type 2 (HSV-2)</td>
<td>Alpha</td>
</tr>
<tr>
<td>Human herpes virus 3</td>
<td>Varicella-zoster (VZV)</td>
<td>Alpha</td>
</tr>
<tr>
<td>Human herpes virus 4</td>
<td>Epstein-Barr (EBV)</td>
<td>Gamma</td>
</tr>
<tr>
<td>Human herpes virus 5</td>
<td>Cytomegalovirus (CMV)</td>
<td>Beta</td>
</tr>
<tr>
<td>Human herpes virus 6/7</td>
<td>Exanthem subitum</td>
<td>Beta</td>
</tr>
<tr>
<td>Iris atrophy</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Postherpetic neuralgia</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
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<td>Rare</td>
<td>Common</td>
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<tr>
<td>Dermatomal distribution</td>
<td>Limited</td>
<td>More complete</td>
</tr>
<tr>
<td>Dendrite appearance</td>
<td>Larger, more branching, discrete, delicate pattern, more central</td>
<td>Smaller, less branching, coarse, blunted pattern, usually peripheral</td>
</tr>
<tr>
<td>Epithelium</td>
<td>Ulcerated</td>
<td>Blunted dendrite with slightly raised edges</td>
</tr>
<tr>
<td>End bulbs</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Herpes Simplex vs Herpes Zoster</td>
<td>Herpes SIMPLEX</td>
<td>Herpes ZOSTER</td>
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</table>

Herpes Simplex vs Herpes Zoster

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</tr>
<tr>
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<td>Rare</td>
<td>Common</td>
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</tbody>
</table>
**Herpes Simplex**

- Can affect anterior to posterior segment
- Corneal aesthesiometry
  - Side that has herpetic infection will show reduced sensitivity
  - Either:
    - Cochet-Bonet aesthesiometer
    - Cotton wisp

**HSV I**
- Oral herpes
- Upper body
- Affects eye, mouth, skin above the waist and respiratory tract
- Less commonly affects genitals
- Transmission by direct contact

**HSV II**
- Genital herpes
- Lower body
- Less commonly affects the eye, but tends to be more severe
- Sexual and neonatal transmission

**Herpes Simplex: Dendritic keratitis**

**Symptoms:**
- Foreign body sensation
- Increased lacrimation
- Photophobia
- Pain

**Signs:**
- Conjunctival hyperemia
- Early SPK that then takes on dendrite pattern
- Branching (dendritic) epithelial lesion
  - Knob-like end bulbs that stain with fluorescein and lissamine green
Herpes Simplex: Dendritic keratitis

Treatment:
- **Topical antivirals**
  - Viroptic ( trifluridine) dosed 9x/day until re-epithelialization; then 5x/day x 7 days
  - Ganciclovir (Zirgan) 5x/day until re-epithelialization then tid x 7 days
- **Oral antiviral as alternative or in conjunction (7-10 days)**
  - Acyclovir 400 mg 5x daily
  - Valacyclovir 500 mg tid
  - Famciclovir 250 mg tid
- **No steroids!**

Herpetic Eye Disease

NEVER PUT A STEROID ON AN ACTIVE DENDRITE

but put one on just about every other ocular herpetic sequela

- Disciform keratitis
- Stromal keratitis
- Herpetic iritis
- Pseudodendrites?

Mechanisms of Ocular Involvement

1. **Direct viral invasion** → epith. keratitis or conjunctivitis
2. **Secondary inflammation** → episcleritis, scleritis, keratitis, uveitis
   - Inflammation and/or degeneration of peripheral nerves, central ganglia or altered CNS signal processing may attribute to PHN
3. **Reactivation** → necrosis and inflammation in ganglia → neurotrophic keratitis

Varicella Zoster

- Primary infection = chicken pox
  - Varivax vaccine
- Secondary infection = zoster/shingles
  - Zostavax vaccine

Recommend Zostavax vaccine to all patients >50y/o
**Shingles Prevention Study**

**Vaccine Efficacy for Incidence of Herpes Zoster**

- **Efficacy (95% CI):**
  - Placebo: 51.3% (44.6%–58.8%)
  - Vaccine: 63.9% (55.5%–70.9%)
  - Placebo: 37.6% (25.0%–48.1%)

**Incidence of HZ**

- Placebo: 11.1 per 100 person-years
- Vaccine: 5.4 per 100 person-years
- Placebo: 10.7 per 100 person-years
- Vaccine: 0.9 per 100 person-years
- Placebo: 1.9 per 100 person-years
- Vaccine: 0.2 per 100 person-years
- Placebo: 2.2 per 100 person-years
- Vaccine: 0.1 per 100 person-years

**Shingles Prevention Study**

**Vaccine Efficacy for Incidence of PHN**

- **Efficacy (95% CI):**
  - Placebo: 66.5% (47.5%–82.2%)
  - Vaccine: 65.7% (20.4%–86.7%)
  - Placebo: 66.8% (43.3%–81.3%)

**Incidence of PHN**

- Placebo: 10.75 per 100 person-years
- Vaccine: 0.46 per 100 person-years
- Placebo: 0.74 per 100 person-years
- Vaccine: 0.26 per 100 person-years
- Placebo: 2.12 per 100 person-years
- Vaccine: 0.71 per 100 person-years

**Varicella Zoster: Herpes Zoster Ophthalmicus**

- **Treatment:**
  - **Topical antivirals:** not effective
  - **Oral antivirals:** dosage is double that for simplex
    - Best if initiated within 48-72 hrs
  - **Most debilitating sequelae:** postherpetic neuralgia
  - **Each case is individual:**
    - i.e. if uveitis, treat uveitis appropriately
  - **Topical artificial tears**
  - **Topical erythromycin ung** can spread over lesions as they crust over

Ok to use a steroid with pseudodendrites!
Oral Antivirals

<table>
<thead>
<tr>
<th></th>
<th>HERPES ZOSTER</th>
<th>HERPES SIMPLEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zovirax (acyclovir)</td>
<td>800mg 5 x/day</td>
<td>400mg 5x/day</td>
</tr>
<tr>
<td>Valtrex (valacyclovir)</td>
<td>1,000mg TID</td>
<td>500mg TID</td>
</tr>
<tr>
<td>(2 x 500mg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Famvir (famcyclovir)</td>
<td>500mg TID</td>
<td>500mg BID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(or 250mg TID)</td>
</tr>
</tbody>
</table>

Varicella Zoster: Herpes Zoster Ophthalmicus

- Patient education:
  - "Am I contagious?" Yes
    - Lesions contain high concentrations of VZV
    - Can cause primary varicella (chicken pox) in susceptible persons
  - "For how long?"
    - Once rash appears until lesions crust
    - Approximately 10-14 days

Oral Antivirals

- Contraindications:
  - Caution with renal insufficiency → consult PCP
- Side Effects:
  - Gastric distress, mild nausea
  - Increased thirst
- Notes:
  - Drink more water while taking antivirals
  - Start within 72 hours for best effect
  - Can also be used to prevent recurrence of stromal disease by ~50%
    - Acyclovir: 400mg bid x 1 year+
    - Valacyclovir: 500mg qd x 1 year+

Oral Antivirals

- Effectively treats all expressions of acute herpes simplex disease
  - i.e. orals expressed in tears, can treat epithelial HSK
- High efficacy and high safety profile → very well tolerated
  - Few side effects and little resistance
- All clinically perform identically
  - Aim to Rx least dosage, usually valacyclovir
  - However, acyclovir is the least expensive
- Note that acyclovir comes as a liquid suspension
  - Kids or adults with difficulty swallowing pills
Herpetic Eye Disease Study: HEDS

- Older HEDS: focused on treatment of active disease
  - No benefit to adding oral acyclovir in stromal keratitis if the patient is already taking topical steroids and antivirals
  - Topical prednisone is helpful in treating stromal keratitis

- Newer HEDS: focused on prevention of recurrence
  - Oral acyclovir 400mg bid reduced rate of recurrence of ANY form of ocular herpes in the following year by 41%
  - Oral acyclovir 400mg bid x 1 year gives 50% reduction in the recurrence of severe forms of ocular herpes, such as disciform keratitis
  - Oral acyclovir 400mg bid if the patient is already taking trifluridine, gives no added benefit in preventing epithelial disease from developing into stromal disease or iritis

Herpetic Prophylactic Treatment

- Acyclovir 400mg bid
- Valacyclovir 500mg qd
- Famciclovir 250mg qd

- All reduce:
  - Frequent debilitating recurrences
  - Bilateral involvement
  - HSV infection in a monocular patient

CASE #8

- 55 year old African American female presented for an emergency eye exam
- CC: Was hit in her left eye 2 days ago (+) painful
- Ocular history: NLP OS (secondary to chronic angle closure)
  - Currently taking glaucoma meds and compliant
- Medical history: (+) Type II DM, HTN, hypercholesterolemia
CASE #8

IOP: 38mmHg

CASE #8

• **Diagnosis**: Traumatic hyphema OS

• **Treatment**:
  – Prednisolone acetate qid OS
  – Cyclopentolate tid OS
  – Continue:
    • Combigan bid OS
    • Dorzolamide tid OS
  – Sleep with head elevated
  – Do not take aspirin for pain
    • Can use Tylenol (acetaminophen) or Advil (ibuprofen)

Note:
Can D/C blood thinners or aspirin with hyphema. Not necessary with vitreous hemorrhage.

CASE #8

Presentation

1m follow-up

Fully resolved in 3 months without recurrence

Trumatic Hyphema

• Hyphema is one of the more challenging sequelae associated with blunt ocular trauma

• Complications:
  – Reduced BCVA
  – IOP elevation ~ one-third patients
    • Trabecular blockage by erythrocytes, fibrin and associated inflammatory cells
Hyphema Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Micro</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC filling</td>
<td>Circulating RBCs only</td>
<td>&lt;33%</td>
<td>33-50%</td>
<td>&gt;50%</td>
<td>100%</td>
</tr>
<tr>
<td>Prognosis &gt;20/50</td>
<td>90%</td>
<td>90%</td>
<td>70%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Traumatic Hyphema

- Management goals:
  - Stabilize the eye to prevent re-bleed
  - Facilitate blood resorption
  - Reduce any associated inflammation
  - Control IOP

Traumatic Hyphema: Treatment

- **Topical cycloplegic**
  - Atropine 1% qd-bid, homatropine bid
  - Immobilize iris and CB, stabilize BAB
- **Topical steroid**
  - Prednisolone acetate 1% qid-q2h
  - Reduce secondary hemorrhage
- **+/ Topical hypotensive**
  - Beta-blockers, alpha-agonists, carbonic anhydrase inhibitors
  - With elevated IOP (usually >26mmHg)

OUT: pilocarpine
Higher complication rate: secondary hemorrhage, uveitis and elevated IOP

Traumatic Hyphema: Treatment

- Relative immobilization is crucial to good recovery
  - Bed rest, rising only for meals and bathroom breaks
- Elevate the head to a 30 angle to promote settling of the hyphema
- Shield eye to prevent incidental trauma
- D/C blood thinners:
  - Aspirin (may need to call PCP)
  - Ibuprofen
  - Vitamin E
  - Ginko biloba
- Consider hospital inpatient management for grade 4 hyphemas with those who may be non-compliant (i.e. young children)
**Traumatic Uveitis**

- The pathophysiology of traumatic uveitis (non-penetrating injury) is incompletely understood
- May be concurrent with hyphema

**Traumatic Uveitis: Treatment**

- **Topical steroid**
  - Prednisolone acetate qid-q1h
  - May be self-limiting
  - Often used to shorten symptom duration
  - Follow-up ~ 1 week
    - Can discontinue steroid with taper if resolved
- **Topical cycloplegic**
  - Homatropine bid

**THANK YOU**

cmorrettin@ico.edu