

Grand rounds: A string of pearls

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COPE #33259-AS

Case #1

Recurrent Corneal Erosions (RCE's)

- Tendency for minor trauma to cause significant corneal epithelial disturbances
- Pathophysiology
 - Abnormally weak attachment between the basal cells of the corneal epithelium and their basement membrane
- Most common causes of the weak attachment
 - Mechanical trauma**
 - Corneal dystrophy**
 - Corneal surgery

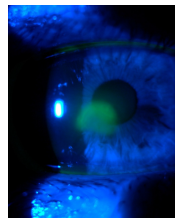
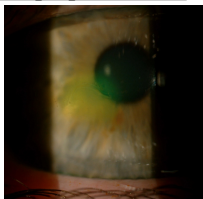
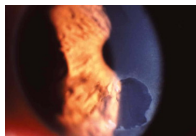
Recurrent Corneal Erosions

- Sx's:
 - Acute, severe pain**
 - Photophobia **
 - Redness
 - Blepharospasm
 - Tearing

Usually sx's present first thing in the morning upon opening the eyes.
And often this is recurrent

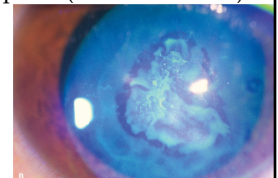
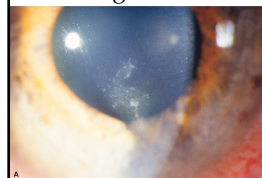
Recurrent Corneal Erosions

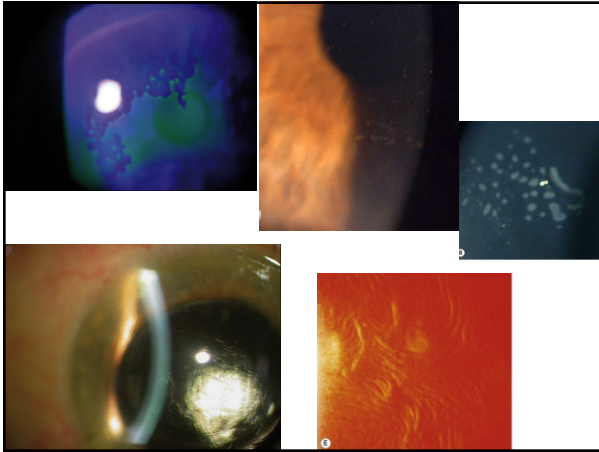
- Signs:
 - Epithelial defect may be present, usually in the inferior interpalpebral area



Recurrent Corneal Erosions

- Signs:
 - If no defect is present, look for loose, irregular epithelium (pooling of NaFl, rapid TBUT)
 - Signs of corneal dystrophies (will be bilateral)





Recurrent Corneal Erosions

- Tx:
 - Acutely:
 - Lubrication**
 - Topical Ab (Polytrim QID, erythro or bacitracin ung)
 - Pain control:
 - Cycloplegic (Homatropine BID)
 - Muro 128 drops or ung
 - Bandage lens???
 - Alleviates pain, does not improve healing

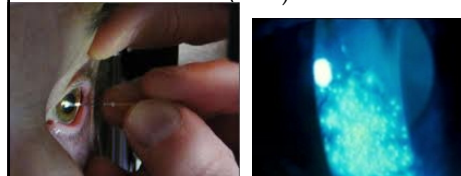
Recurrent Corneal Erosions

- Tx:
 - After the epithelium heals (recalcitrant RCE's):
 - Fresh Kote TID (15ml bottle \$25)
 - Muro 128 ung qhs (3.5g tube \$10)
 - Lotemax QID X 2 weeks, BID X 6 weeks
 - Doxycycline 20-50mg BID
 - Azasite BID (2.5ml bottle \$78)

Avoid chronic long-term AT ung

Recurrent Corneal Erosions

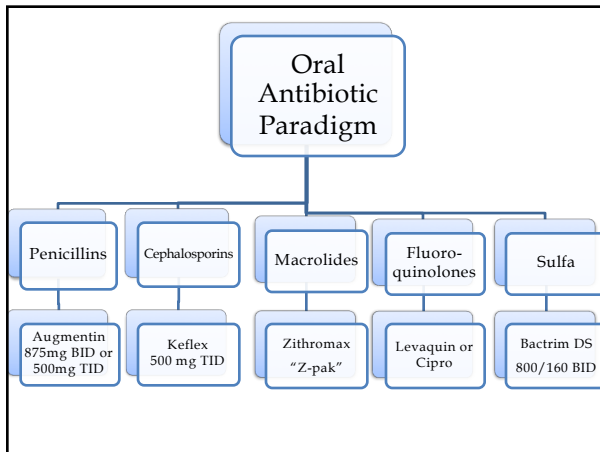
- Surgical Tx:
 - Anterior stromal micropuncture
 - Debridement of epithelium with polishing of Bowman's membrane with a diamond burr or excimer laser (PTK)



Case #2

Eyelid abscess vs. Preseptal Cellulitis vs. Orbital Cellulitis

- | | |
|--|--|
| <ul style="list-style-type: none"> • Preseptal Cellulitis <ul style="list-style-type: none"> – Usually upper eyelid swelling – Pain, tenderness, redness – Usually caused by adjacent infection (hordeolum, dacryocystitis) | <ul style="list-style-type: none"> • Orbital Cellulitis <ul style="list-style-type: none"> – All the same signs of preseptal with – Proptosis – EOM restrictions/pain with eye movements – Pupillary involvement – Usually an extension from an ethmoid sinusitis |
|--|--|



Preventing Resistance

- Just one organism, methicillin-resistant *Staphylococcus aureus* (MRSA), kills more Americans every year (~19,000) than emphysema, HIV/AIDS, Parkinson's disease, and homicide combined
 - most serious MRSA infections, an estimated 85%, are associated with a healthcare exposure, but nearly 14% of the infections are community-associated.
- Almost 2 million Americans per year develop hospital-acquired infections (HAIs), resulting in 99,000 deaths the vast majority of which are due to antibiotic-resistant pathogens
- CDC: *Get Smart: Know When Antibiotics Work*
 - teaches both the provider and the patient when antibiotics should be used.
- The IDSA suggests five to seven days is long enough to treat a bacterial infection without encouraging resistance in adults, though children should still get the longer course
 - this is different than previous guidelines of treating infections from 10-14 days.

9/6/16

Ocular TRUST 3: Ongoing Longitudinal Surveillance of Antimicrobial Susceptibility in Ocular Isolates

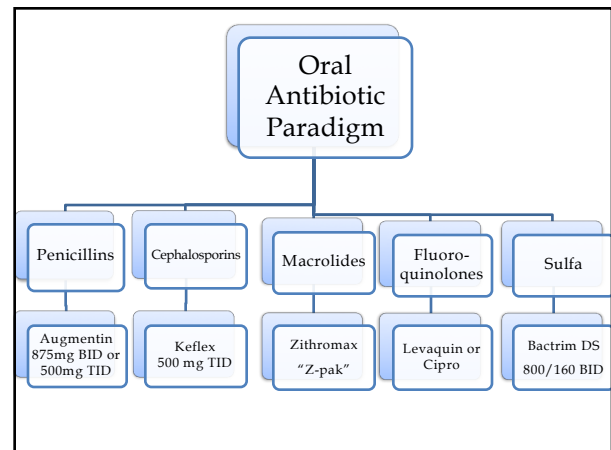
- Background:
- Ocular TRUST is an ongoing annual survey of nationwide antimicrobial susceptibility patterns of common ocular pathogens.
- To date, more than 1,000 isolates from ocular infections have been submitted to an independent, central laboratory for in vitro testing.
- Ocular TRUST, now in its third year, remains the only longitudinal nationwide susceptibility surveillance program specific to ocular isolates.

Ocular Trust 3

- Antimicrobials tested represent six classes of drugs:
 - fluoroquinolones (ciprofloxacin, gatifloxacin, levofloxacin, moxifloxacin);
 - dihydrofolate reductase inhibitors (trimethoprim);
 - macrolides (azithromycin);
 - aminoglycosides (tobramycin);
 - polypeptides (polymyxin B); and
 - β -lactams (penicillin).
- Staphylococci* were classified as methicillin-resistant (MRSA) or methicillin-susceptible (MSSA) based on susceptibility to oxacillin.

Ocular Trust 3: Results

- most antimicrobials, except penicillin and polymyxin B, continue to be highly active against MSSA (azithromycin shows only moderate activity)
- with the exception of trimethoprim and tobramycin, less than one-third of MRSA strains are susceptible to ophthalmic antimicrobials
- susceptibility profiles remain virtually identical for the fluoroquinolones, regardless of methicillin phenotype
- S. aureus* is more susceptible to the fluoroquinolones than to macrolides, as represented by azithromycin



Case #3

Acanthamoeba keratitis

- History of CL wear w/ poor lens hygiene
- Often a history of hot tub/swimming pool/swimming in the river
- Symptoms:
 - Severe pain out of proportion to clinical picture
 - Redness & photophobia
 - All over the course of several weeks
- Signs:
 - Early -> Pseudodendrites
 - Late -> Ring-shaped stromal infiltrate

Acanthamoeba Keratitis

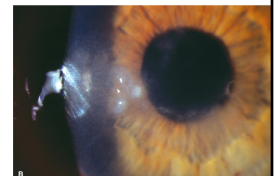
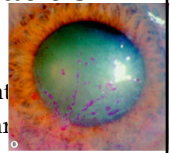
- Sx's:
 - Severe pain**
 - Redness
 - Tearing
 - Decreased vision
 - Photophobia
 - Minimal discharge

These sx's tend to develop over a period of weeks.**

H/O CL hygiene problems and swimming in lenses**

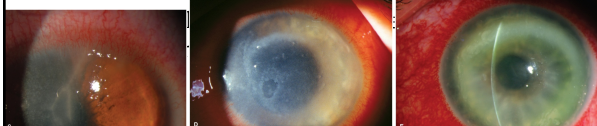
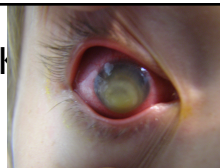
Acanthamoeba Keratitis

- Signs:
 - Epithelial or subepithelial infiltrates appearing as pseudodendrites early
 - Patchy anterior stromal infiltrates can also appear early



Acanthamoeba Keratitis

- Signs:
 - Radial keratoneuritis**
 - Perineural infiltrates seen during the first 1-4 weeks
 - Gradual enlargement and coalescence of the infiltrates to form a ring infiltrate**
 - Inflammation in the cornea doesn't look that bad**



Acanthamoeba Keratitis

- Tx:
 - Topicals:
 - PHMB 0.02% drops q1h
 - Chlorhexidine 0.02% q1h
 - Fine line agents can be given separately or together
 - Propamidine 1% (Brolene) q1h
 - Orals:
 - Voriconazole 200 mg BID
 - Itraconazole 200-400 mg QD
 - Cycloplegics (homatropine BID)
 - Topical steroids??
 - Pain control
 - Surgery

Fungal keratitis

- Often a history of vegetative trauma, CL wear
- H/O poor response to topical Ab's
- Symptoms:
 - Pain, photophobia, tearing, FB sensation
 - Pain often less than what the clinical picture would indicate
- Signs:
 - Stromal infiltrate w/ a feathery border
 - Satellite lesions surrounding the primary infiltrate

Fungal Keratitis

- Sx's:
 - Gradual onset of pain
 - Irritation/grittiness
 - Photophobia
 - Blurred vision
 - Watery or mucopurulent discharge

H/O cornea infection diagnosed as bacterial**

H/O vegetative trauma, CL abuse, chronic steroid use

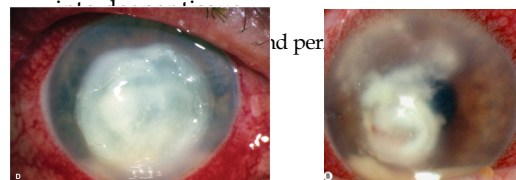
Fungal Keratitis

- Signs:
 - Gray-white stromal infiltrate with indistinct "fluffy" or "feathery" borders/margins
 - Often surrounded by fingerlike satellite lesions in the adjacent stroma



Fungal Keratitis

- Signs:
 - Epithelial defect overlying the ulcer
 - However can be quite small and sometimes is not present
 - Infiltrates may progressively enlarge and extend



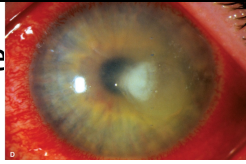
Fungal Keratitis

- Tx:
 - Pts may require hospitalization
 - Topical meds:
 - Natamycin 5% (for filamentous fungi)*
 - Amphotericin B 0.15% (for Candida)*
 - Both q1h around the clock initially and then tapered over 6-12 weeks
 - Orals meds:
 - Voriconazole 200 mg BID
 - Itraconazole
 - Fluconazole
 - Cycloplegics (homatropine BID)
 - Surgical (PKP or DALK)

Which topical antibiotic is your "go-to" choice for a suspected MRSA infectious bacterial ulcer?

- Zymaxid/Zymar
- Polytrim
- Besivance
- Moxeza/Vigamo
- x
- Ciloxan
- Tobramycin
- Vancomycin

Bacterial Keratitis

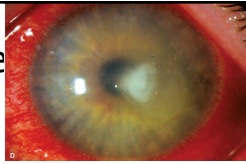


- Tx:
 - Hospitalization???
 - No CL's***
 - Pain relief
 - Topical Ab's: (amount & strength depends on the ulcer)
 - Besivance, Moxeza, or Zymaxid q1h around the clock for 24-48 hours & tapering according to clinical progress
 - Besivance (or Moxeza or Zymaxid) & Tobramycin (or Gentamicin) q1h alternating around the clock
 - Fortified Ab's??? (large ulcers, visual axis, hypopyon)
 - Fortified Vancomycin, cephalosporins and/or gentamicin

Ocular Trust 3: Results

- most antimicrobials, except penicillin and polymyxin B, continue to be highly active against MSSA (azithromycin shows only moderate activity)
- with the exception of trimethoprim and tobramycin, less than one-third of MRSA strains are susceptible to ophthalmic antimicrobials
- susceptibility profiles remain virtually identical for the fluoroquinolones, regardless of methicillin phenotype
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Bacterial Keratitis



- Tx:
 - Steroids???
 - Reduce inflammation, improve comfort, and minimize corneal scarring...but evidence that they improve final visual outcome is limited
 - Will make herpes, fungal, acanth much worse
 - Epithelialization may be slowed by steroids
 - Can cause corneal thinning (but not usually)
 - DO NOT USE until clinical improvement is seen with Ab's alone
 - Pred Forte QID
 - Doxycycline or Azasite???
 - Inhibit MMP-9

Case #4

Scleritis

- Rare disorder of inflammation & necrosis centered on the sclera
- 30-60 year olds, female > male
- Bilateral 40-80% of time
- Pathophysiology is poorly understood
- Etiology
 - 50% of cases are idiopathic
 - 50% of cases are associated with systemic disease
 - Connective tissue diseases
 - RA most common
 - Infections
 - HZO, HSK, syphilis

Scleritis

- Types of Scleritis
 1. Diffuse anterior scleritis
 2. Nodular anterior scleritis
 3. Necrotizing anterior scleritis w/ inflammation
 4. Necrotizing anterior scleritis w/o inflammation (scleromalacia perforans)
 5. Posterior scleritis

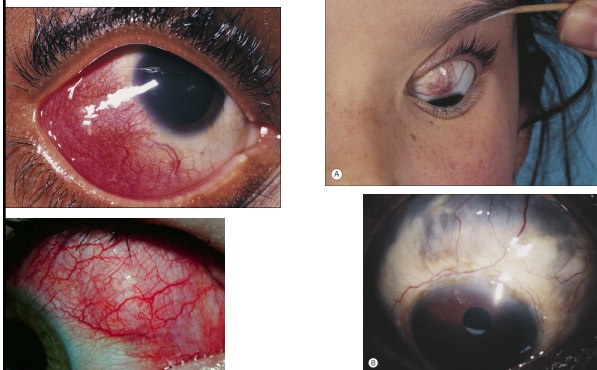
Scleritis

- Symptoms
 - Severe, boring, deep eye pain*** (80%)
 - Can radiate to the forehead, brow, jaw
 - May awaken pt from sleep
 - Diffuse red eye
 - Photophobia
 - Tearing

Scleritis

- Signs
 - Sectoral or diffuse inflammation of conj, episcleral, and scleral vessels
 - Scleral vessels do not move at all and do not blanch w/ phenyl
 - Bluish hue to sclera***
 - Scleral nodules
 - Corneal changes (peripheral infiltrates/keratitis)

Scleritis



Scleritis

- Differential Diagnosis
 - Episcleritis
 - Uveitis
- Diagnosis
 - Clinical picture
 - If underlying systemic disease is not known, systemic workup is indicated (refer to PCP or internist)***
 - CBC
 - ANA/Rf/HLA-B27
 - ESR
 - RPR/FTA-ABS
 - Fasting blood sugar
 - ACE
 - C-ANCA, P-ANCA

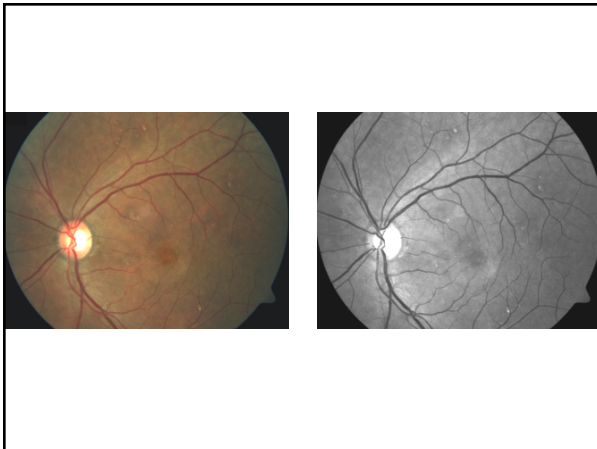
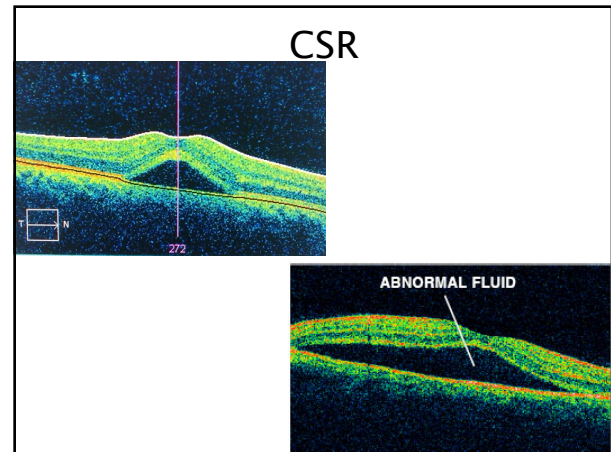
Scleritis

- Treatment – depends on severity and type
 - Oral NSAIDs
 - Indomethacin 25-50 mg TID
 - Ibuprofen 400-600 mg QID
 - Naproxen 250-500 mg BID
 - Oral Steroids
 - Prednisone 60-100 mg QD X 1 week with taper down to 20 mg QD over next 2-3 weeks, slow taper after that as well
 - Immunosuppressive therapy
 - Cyclophosphamide, methotrexate, cyclosporin

Case #5

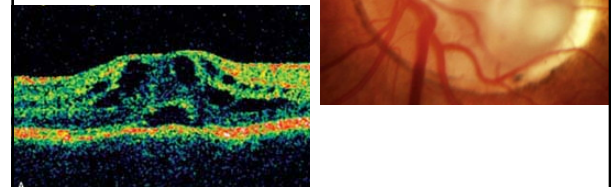
Central Serous Chorioretinopathy (CSR)

- Demographics
 - 25-50 year old men, stressed/Type A personalities
- Symptoms
 - Unilateral, blurred vision
 - VA -> usually 20/20 - 20/80
 - Metamorphopsia
- Signs
 - Localized serous detachment of the neurosensory retina in the macula



Central Serous Chorioretinopathy

- DDx:
 - Optic disc pit
 - CNVM



Central Serous Chorioretinopathy

- Med associations:
 - Steroids
 - Nasal sprays, steroid creams, oral, injectable
 - Ephedra
 - Ephedrine & pseudoephedrine
- Treatment:
 - Observation/lifestyle change
 - D/C steroid if possible
 - Possible laser therapy

Case #6

Plaquenil Toxicity

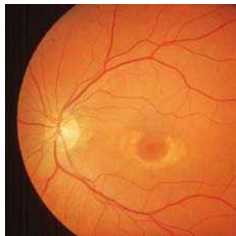
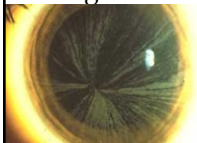
- Antimalarials:
 - Chloroquine
 - Hydroxychloroquine (Plaquenil)
- Now used for RA, SLE, Sjogren's, etc.
- Toxicity risk is low, but....
- Lots of different screening recommendations have been proposed

Plaquenil Toxicity

- Risk Factors:
 - Cumulative dose**
 - 1000 gram cumulative dose for Plaquenil
 - 6.85 years to reach that
 - Daily dose
 - Age
 - Liver or kidney dysfunction
 - Pre-existing retinal disease or maculopathy

Plaquenil Toxicity

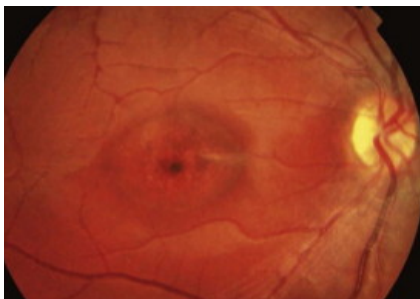
- Symptoms:
 - Asymptomatic early
 - Paracentral visual field defects affecting reading
 - Color vision changes
- Signs:



Progression of Plaquenil maculopathy - early



Progression of Plaquenil maculopathy - moderate

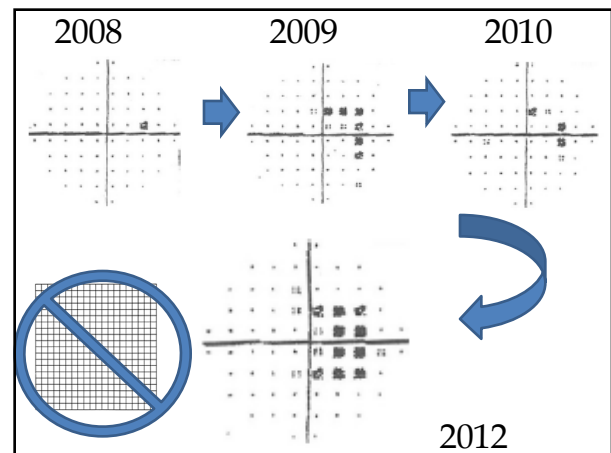


Progression of Plaquenil maculopathy - advanced



Plaquenil Toxicity

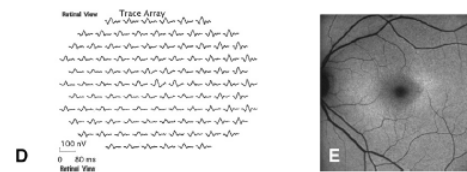
- Recommended Screening Guidelines:
 - Baseline exam within the first year of starting Plaquenil
 - Biomicroscopy exam, 10-2 VF, Fundus photos
- After 5 years, annual screening exams
 - SD-OCT or
 - mfERG or
 - Fundus autofluorescence



Plaquenil Toxicity

- Recommended Screening Guidelines:
 - Baseline exam within the first year of starting Plaquenil
 - Biomicroscopy exam, 10-2 VF, Fundus photos
 - SD-OCT or mfERG or fundus autofluorescence
- After 5 years, annual screening exams
 - Biomicroscopy exam along with 10-2 VF and
 - SD-OCT or
 - mfERG or
 - Fundus autofluorescence

Fundus Autofluorescence & mfERG



Plaquenil Toxicity

- Tests not recommended for screening
 - Fundus photography
 - Time-domain OCT
 - FA
 - Full-field ERG
 - EOG
 - Color vision testing
 - Amsler grid

Plaquenil Toxicity

- Treatment:
 - No medical therapy is available to treat/cure the toxicity
 - D/C the med if possible
 - Work with the PCP

Case #7

Pseudotumor Cerebri

- AKA
 - Idiopathic intracranial hypertension
- Elevated intracranial pressure
 - Not caused by tumor, infection, or obstruction of the ventricular system
 - Increased production vs. decreased absorption
- Etiology:
 - Idiopathic (young, obese females)
 - Medications
 - Oral contraceptives, Tetracyclines, too much vitamin A
 - Trauma

Pseudotumor Cerebri

- Symptoms:
 - HA's (90%)
 - Visual disturbances (72%)
 - Transient visual obscurations (TVO's)
 - Tinnitus (60%)
 - Diplopia (20%)
 - Blurred vision
 - Abnormal color vision
 - N&V

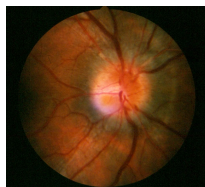
Pseudotumor Cerebri

- Signs
 - Papilledema – hallmark sign of PTC
 - Increased intracranial pressure -> slowing axonal transport -> accumulation of axonal contents in the NFL -> elevated ONH's
 - Bilateral disc edema
 - Blurred disc margins
 - Obscuration of blood vessels*
 - Hyperemia of the disc
 - Venous dilation
 - Peripapillary hemorrhages & CWS



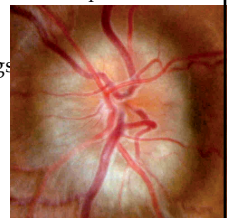
Pseudotumor Cerebri

- Other signs
 - Enlarged blind spot
 - 6th nerve palsy
 - Tends to subside as treatment is effective



Pseudotumor Cerebri

- Diagnosis:
 - Clean MRI/MRV
 - Lumbar puncture
 - Elevated ICP > 250mmH₂O in an obese pt
 - > 200mmH₂O in a non-obese pt
 - Normal CSF composition
 - No other neurological findings
 - Exception -> 6th nerve palsy
 - SVP
 - Yes -> not Pseudotumor
 - No -> ?????



Pseudotumor Cerebri

- Treatment:
 - Weight Loss*
 - Papilledema resolution with weight loss of 6% of total body weight
 - Diamox (acetazolamide)
 - 500 mg Sequels BID-QID
 - Taper as the sx's stabilize
 - Lumbar-peritoneal shunt
 - Optic nerve sheath decompression

Thank you for your
attention!