TAKING THE MYSTERY OUT OF ORAL MEDICATIONS

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- No financial disclosures
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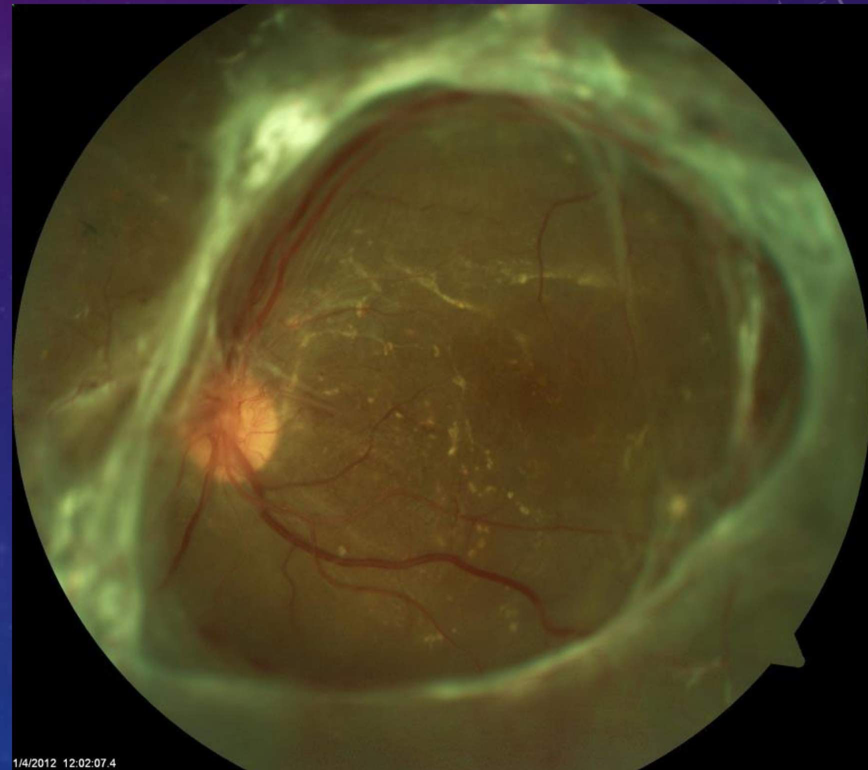
CATEGORIES

- I) ANTIBIOTICS
- II) ANTIVIRALS
- III) PAIN RELIEF
- IV) STEROIDS



ORAL ANTIBIOTICS: OCULAR INDICATIONS

- Beat the bugs!
- Rosacea / Ocular Rosacea
- Dacryoadenitis
- Dacryocystitis
- Preseptal Cellulitis
- Hordeola / Chalazia
- Blowout Fractures

COST

- $4 (30 day) and $10 (90 day) lists for generics at many pharmacies
- Indicated by an *

CEPHALEXIN *

- 250 or 500 mg (QID or BID)
- Excellent broad-spectrum cephalosporin
- Bactericidal
- Cross sensitivity with penicillin regarding allergies but not with everyone. Only about 10%
- Keflex brand is very expensive!
- Up to 40% failure rate with facial cellulitis due to resistance

DICLOXACILLIN

- Penicillinase resistant penicillin
- Great for soft tissue infections
- Bactericidal
- Nausea, allergies, diarrhea
- 250 mg QID or 500 mg BID
- Inexpensive

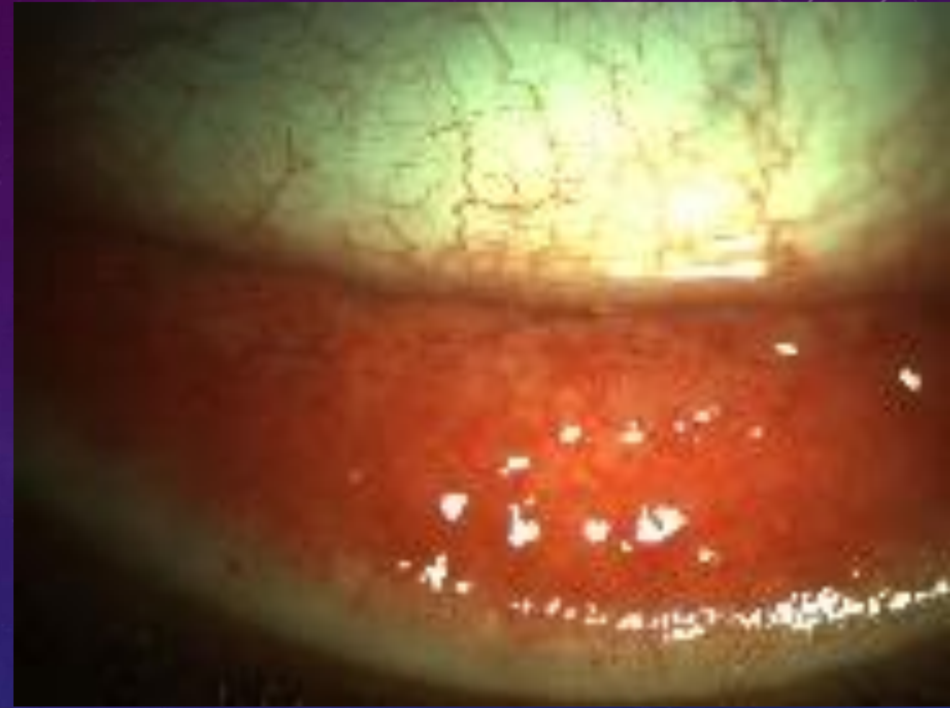
AUGMENTIN

- Amoxicillin plus clavulanate: 250 ,500 mg TID or 875mg BID
- Works on bugs that are resistant to penicillin due to penicillinase
- Bactericidal, good coverage, allergies
- 500mg available generically, but more expensive than dicloxacillin

TETRACYCLINE*

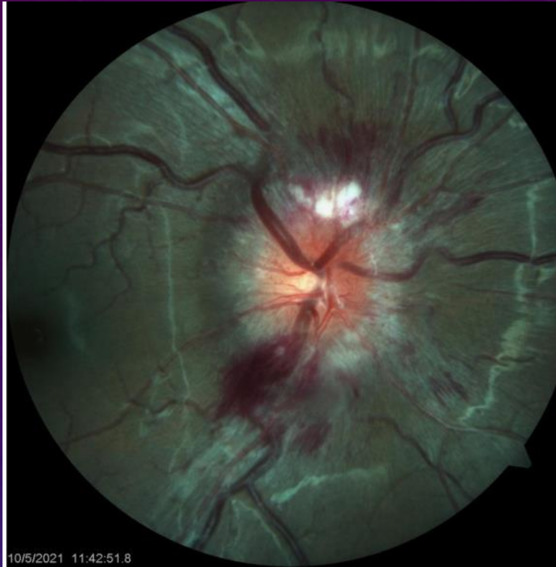
- 250 or 500 mg QID
- Bacteriostatic with much resistance
- Poor for soft tissue disease
- Can not be used in pregnant women or children due to effect on bone and enamel formation (discoloration of teeth)
- Makes BC Pill less effective. Yeast infections.
- Photosensitivity, stomach upset, calcium inactivation (take on empty stomach)
- Great lipid / acid modulating effects

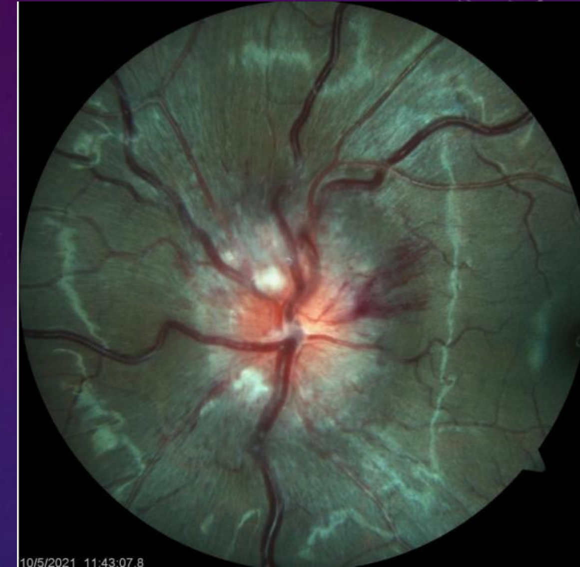
DOXYCYCLINE



- 50 or 100 mg, often BID at first
- Periostat: 20mg (mostly dental use)
- In tetracycline family
- Can take with food
- Less problems with photosensitivity
- Still get stomach upset (don’t lie flat for 30 minutes)
- As effective as tetracycline but fewer side effects, better dosing.
- Oracea (30 /10) $$$$$$$$$$$$$ (very expensive)
- Doxy used to be inexpensive, but no longer. Removed from $4 / $10 plans
- Can also use minocycline

MINOCYCLINE





- 50 or 100 mg BID
- Similar side effect profile to others, but also blue / black discoloration of skin, nails, and sclera with long term use.
- Often used for acne
- Relatively high rate of increased ICP (intracranial pressure)

AZITHROMYCIN

- Zithromax Z-pack: 6, 250 mg capsules. Is a macrolide. Moderate price but good for compliance
- Take 500 mg (2) the first day and one 250 mg tablet each of the next 4 days
- Can also take a single, 1000 mg dose (for ocular chlamydia for example). Powder pack
- May enhance the effect of oral anticoagulants
- 2 X risk of sudden cardiac death in heart patients

AZITHROMYCIN

- Now has FDA warning for fatal arrhythmia
- Greater risk if prolonged QT interval, bradycardia, hypomagnesia
- Many experts calling for ban due to resistance concerns. Long half life and broad spectrum contribute majorly to overall resistance.
- Can be as effective in treating rosacea / MGD / chalazia as the tetracycline / doxycline family of drugs

ERYTHROMYCIN*

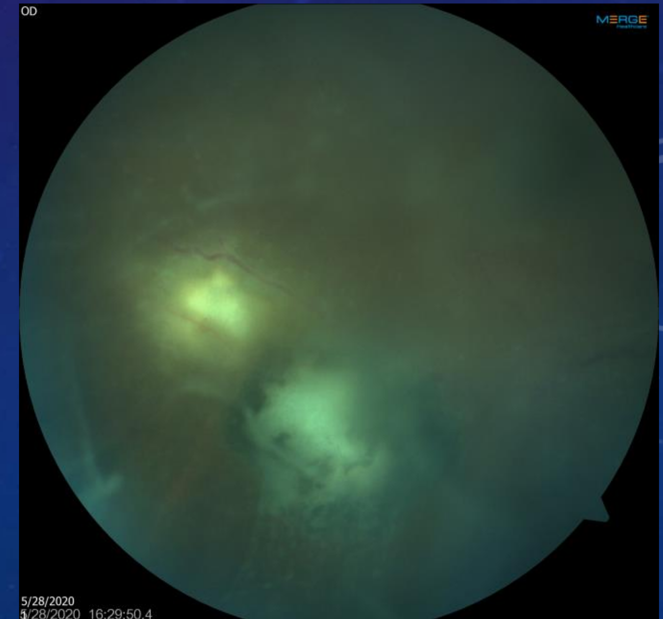
- Ery-tab sustained release tablets 250, 333, or 500 mg. Dose is 1000 mg (1 gram) per day so dose according to tablet
- Can use safely when tetracycline family can not be used (children, etc.)
- Bacteriostatic and terrible stomach upset
- Does not have the lipid / acid modulating properties of the tetracyclines
- Very rarely a first choice

ERYTHROMYCIN

- Increased risk of sudden cardiac death
- Two-fold increase of very low risk when taken alone
- Five-fold increase when taken with the following drugs…… Diltiazim, Fluconozole, Itraconozole, Ketaconozole, Verapamil
- These drugs slow the breakdown of E-mycin resulting in increased concentration which in turn increases cellular sodium levels in resting heart muscle cells triggering an arrhythmia

BACTRIM

- Trimethoprim and Sulfamethoxazole: one tablet contains 80 mg T and 400 mg S (also available in double strength). One double-strength tablet Q12h
- Can not use if patient has sulfa allergy
- Good against MRSA and toxoplasmosis (DS)



CIPROFLOXACIN*

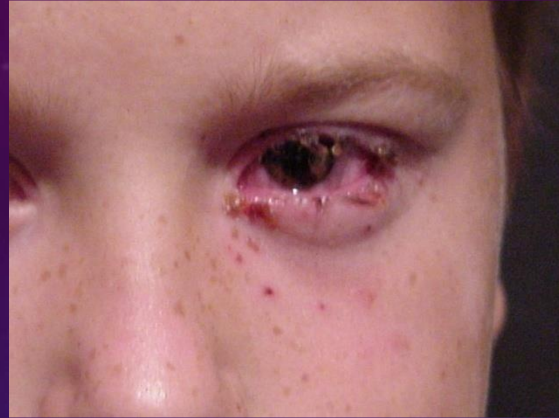
- Fluoroquinolone: 750 / 500 / 250 BID
- 5mg/100ml suspension
- Effective but overused so resistance an issue.
- Should not use in patients under 18 due to joint / tendon problems
- Possible increased risk of RD has been refuted for the most part
- FDA now says oral Fluoroquinolones should never be first line choice due to potential SE’s

ORAL FLUOROQUINOLONES

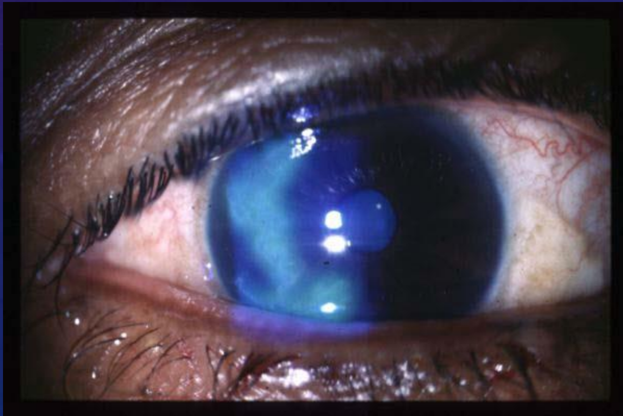
- Significant side effects……

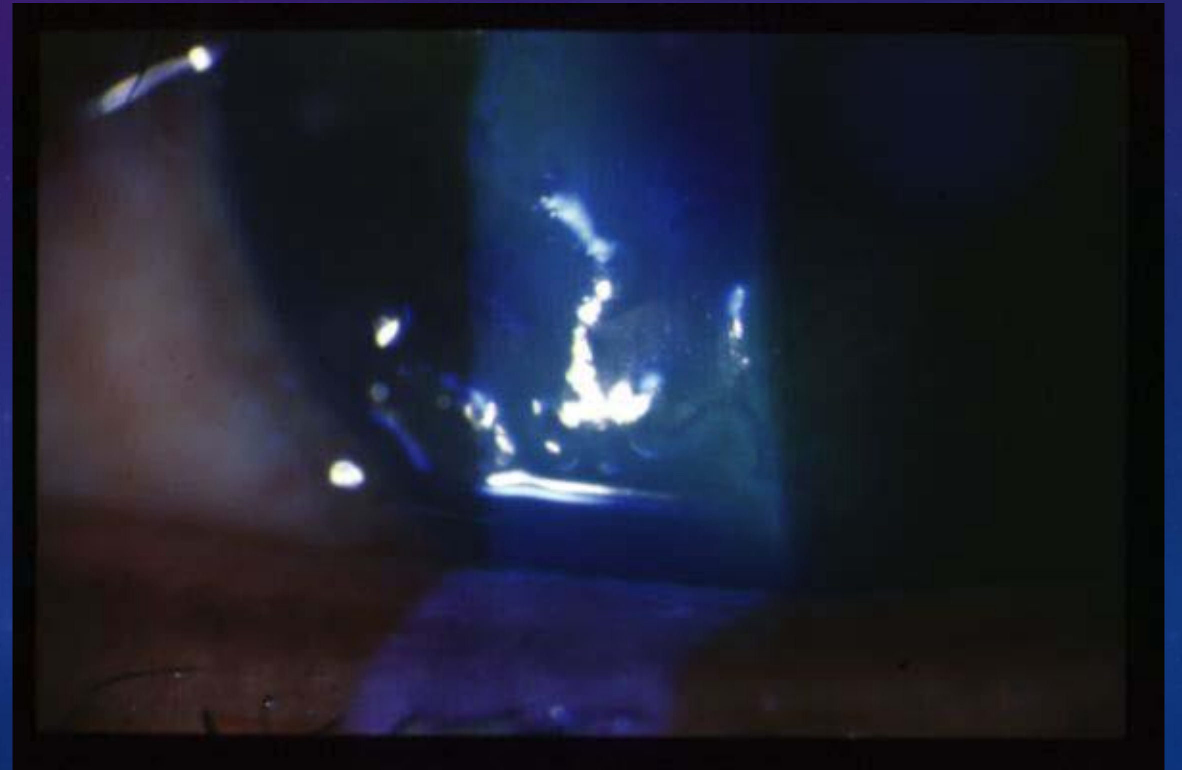
- Peripheral neuropathy
- Tendon rupture
- Heart arrhythmia
- Dysglycemia in diabetics
- Possibly GI perforation

ORAL ANTIVIRALS



- Used to manage Herpes Simplex and Herpes Zoster





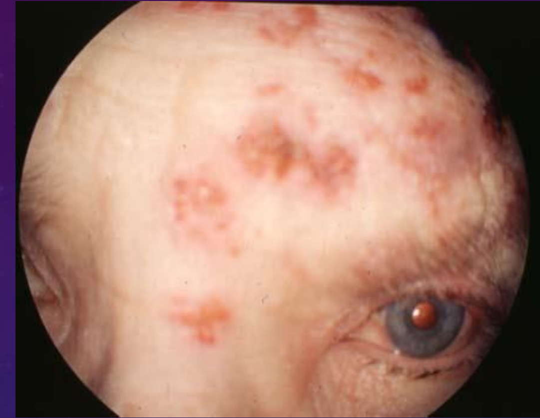
ORAL ANTIVIRALS-DOSING SIMPLEX

- Acyclovir (200*,400,800) : typically 800mg TID, varies
- Prophylactic dosing 400mg BID
- Also available in a pediatric suspension
- 200 mg available on $4 / $10 plans, but only allocated one 200 mg tablet per day, so problematic

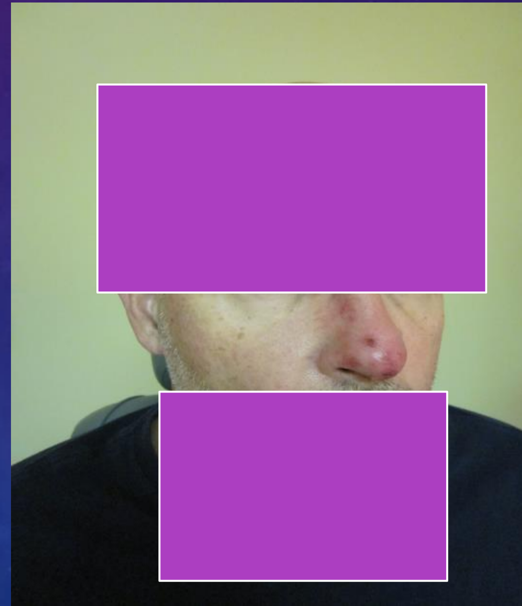
- Famvir (125,250,500)
- 500mg TID

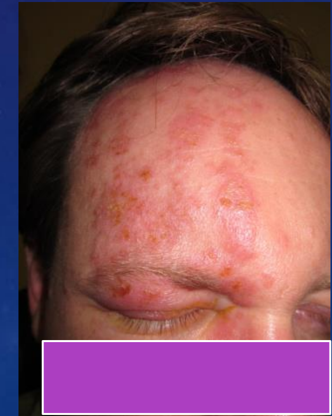
- Valtrex (500,1000)
- 500 mg TID
- Better bio-availability than Acyclovir

ORAL ANTIVIRALS-DOSING ZOSTER



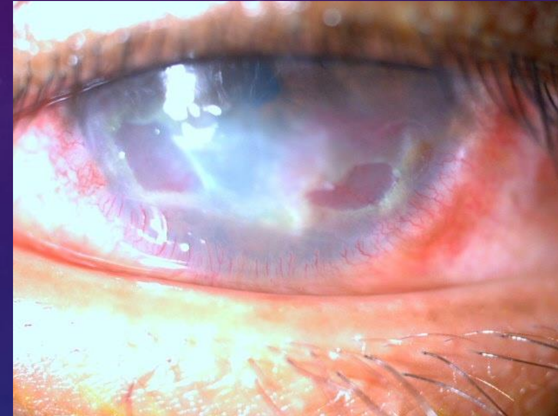
- Acyclovir: 800mg 5X day for 10 days
- Famvir: 500mg TID x 1week (may be antiviral of choice with zoster: can kill latent virus particles)
- Valtrex: 1000 mg TID X 1 week

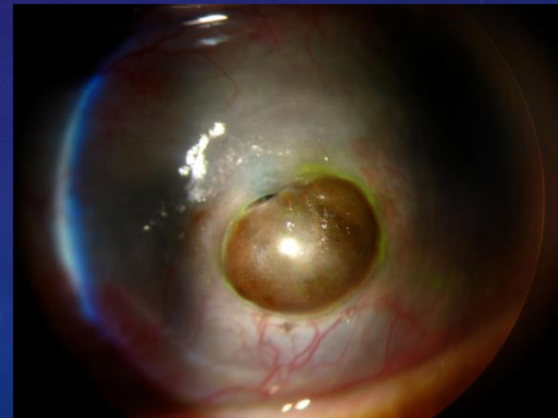




SIDE EFFECTS OF ANTIVIRALS

- Very safe
- Significant caution with renal impairment: only true contraindication other than allergy
- Headache
- GI upset / abdominal pain
- Hallucinations in elderly patients



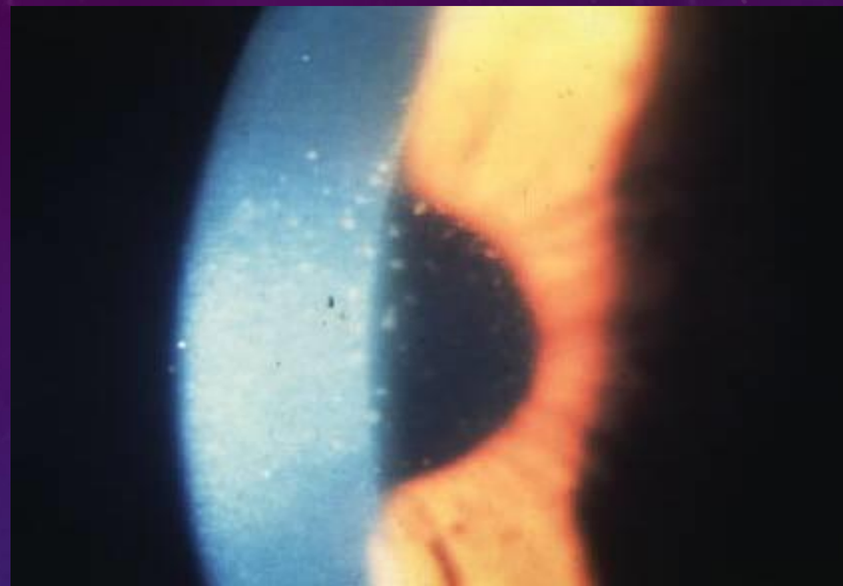


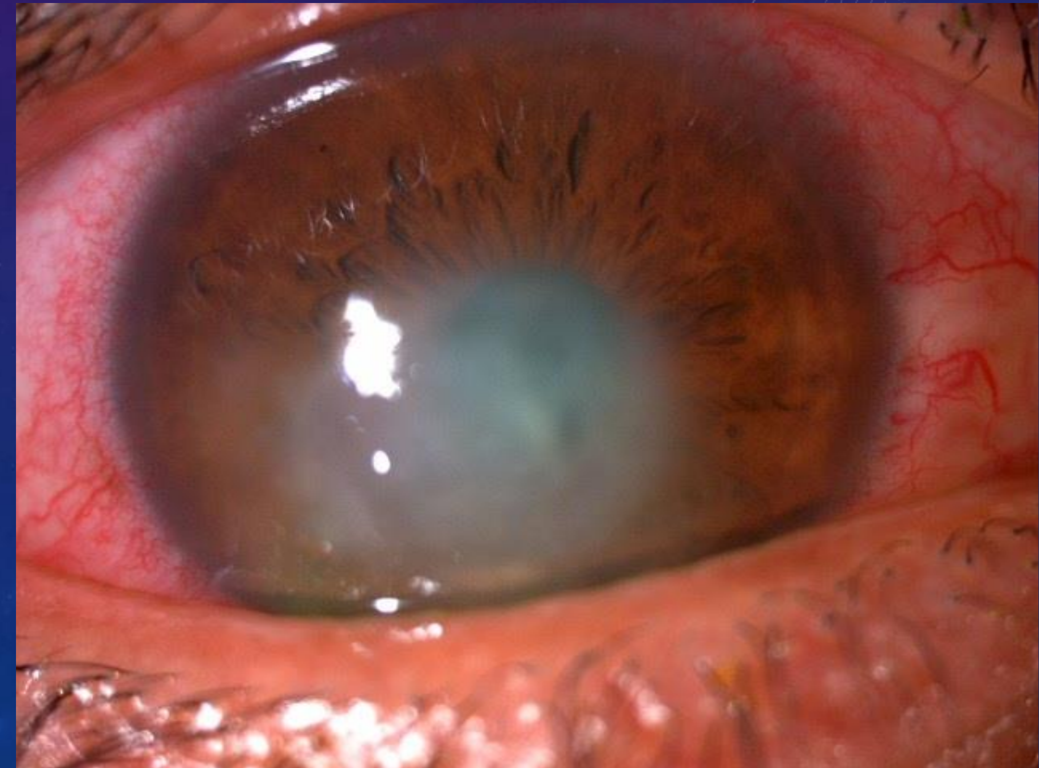
H.E.D.S. (HERPETIC EYE DISEASE STUDY) - FINDINGS

- Prophylactic 400 mg of oral Acyclovir (Famvir / Valtrex not studied) twice per day for one year resulted in a 45% decrease in the rate of recurrence for all forms of ocular complications
- Over the six months after discontinuation, there was no rebound increase but no continued benefit, so have to keep taking it
- Interestingly, the benefit mostly applied to those with previous stromal disease, not previous dendrites alone in this study

MORE RECENT STUDY

- Olmstead County, Minnesota (394 patients)
- Those NOT taking prophylactic antivirals were……
- 9.4 X more likely to have epithelial recurrence
- 8.4 X more likely to have stromal rec.
- 34.5 X more likely to have lid / conj. rec.





PROPHYLAXIS

- So………
- At least discuss prophylaxis for all patients with stromal disease and patients with multiple attacks of epithelial disease
- Acyclovir 400mg PO BID
- Very safe, caution in severe kidney disease, monitor creatine and BUN

PROPHYLAXIS

However: Report in Journal of Infectious Disease 2013:208 (November) 1359-1365 and an editorial in the same issue……

- Are we creating Acyclovir resistant strains of HSV with prophylactic use?
- In cases using Acyclovir for ocular prophylaxis, 26% showed ACV resistance. So we must consider this

ORAL PAIN MEDICATIONS

- Manage underlying condition appropriately first from an ocular standpoint

- Topical/ocular pain control……
- Cycloplegia
- NSAIDS
- Steroids
- Bandage CL
- Topical anesthetic in office only

PAIN MEDICATIONS

- If topical management is not enough, then consider oral pain relief
- Laws vary for OD's regarding use of controlled substances

- Two broad categories…

- OTC pain relief, mostly NSAID's
- Narcotic pain relief

COMPARISON OF ANALGESICS

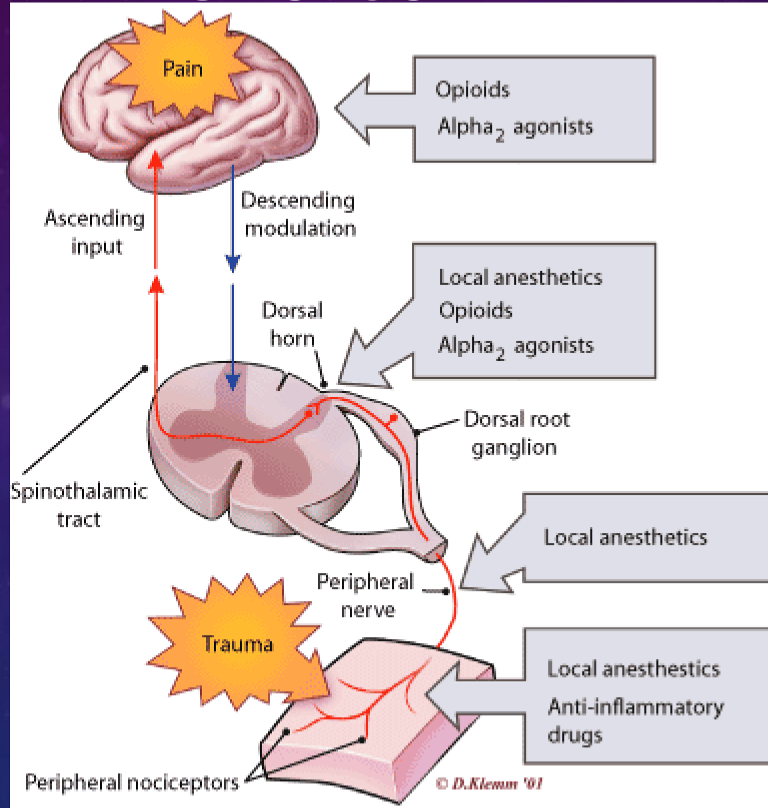


Image from cvm.msu.edu/.../Pain%20Management%20PDA.htm

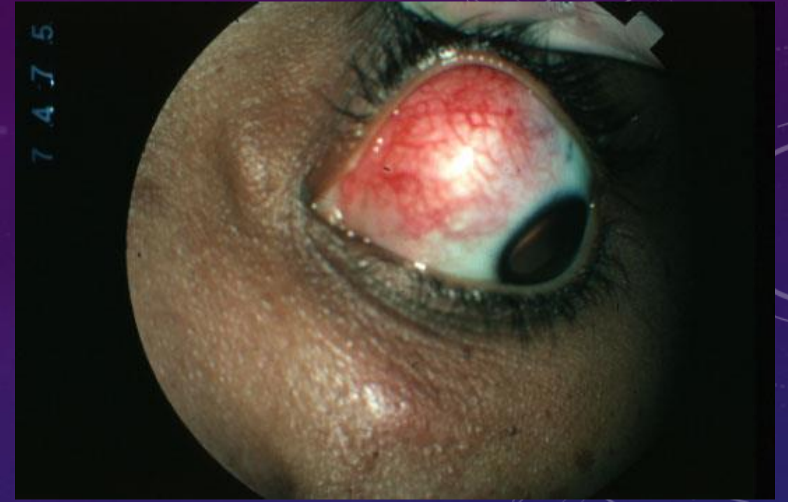
NSAIDS

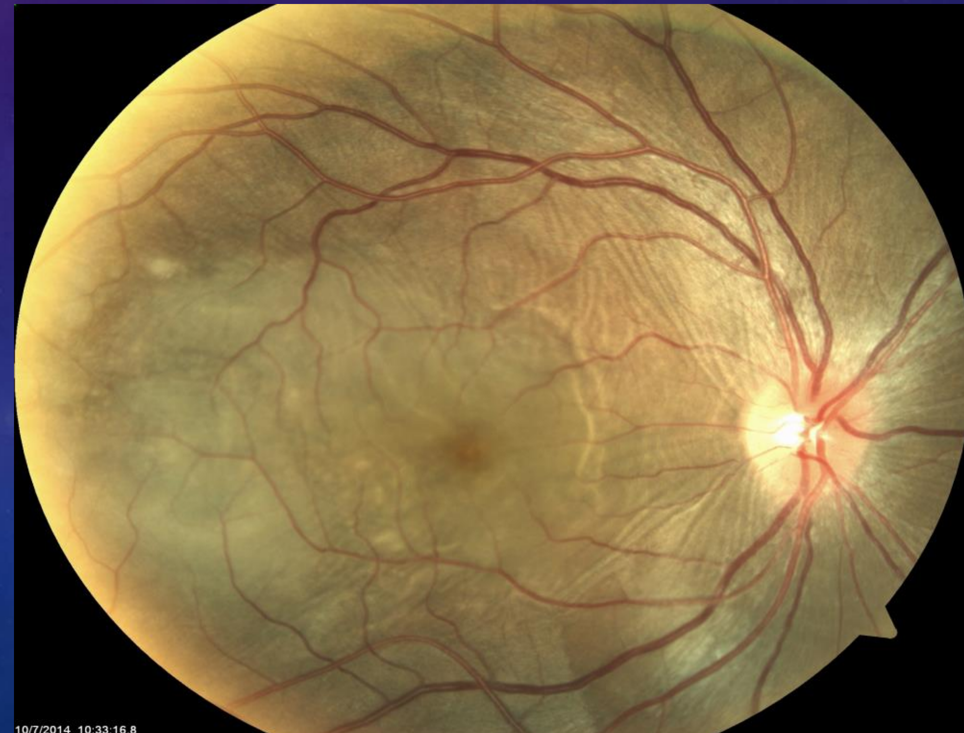
- OTC NSAID's are often enough to mitigate ocular pain
- Aspirin, Ibuprofen, APAP, naproxen
- Common Trade names aspirin, Advil, Tylenol, Aleve

- Aspirin 81mg, 325-500mg
- Advil 200mg
- Tylenol 325-500mg
- Aleve 220mg

RX NSAIDS

- Indomethacin (Indocin) 25, 50 mg
- Naproxen (Anaprox) 275, 550 mg
- Ibuprofen (Motrin) 200-800 mg
- Indomethacin very good for scleritis. TID dosing





COMMON NSAID CONCERNS

- GI upset (take with food or drink, don’t lie down for 30 minutes)
- Bleeding
- Ulcers

- Caution also with renal disease, heart disease, liver disease (mostly APAP)
- Rx strength particularly problematic with heart disease

TRAMADOL (ULTRAM): USED TO BE NON-NARCOTIC, BUT NOW A CONTROLLED SUBSTANCE

- Immediate release (50-100 mg) and extended release (100-300 mg)versions
- Maximum dose 300mg /day
- Dose q 6-8 h
- Schedule IV, so limited (but possible) abuse potential

NARCOTIC PAIN RELIEF

- As an OD, may or may not have authority to use (only Tramadol in Indiana for example)
- Standard warnings…..no alcohol, don't operate machinery

NARCOTIC SIDE EFFECTS

- Constipation very common, and can be severe
- Nausea and vomiting: often ceases after first few doses
- Sedation
- Lack of mental clarity

- Respiratory depression (most severe)

NARCOTIC PAIN RELIEF

- DEA Scheduled substances
- I-V
- Schedule one has high abuse potential, schedule 5 very limited abuse potential

- Two types of dependence….
- Psychological and physical
- Physical usually requires 2 weeks of therapy or more

OXYCODONE

- Schedule II :high abuse potential with severe dependence risk
- Percocet: 5mg with 325 mg of APAP
- Percodan:4.5mg with 325 of APAP

- Tylox: 5mg with 500mg of APAP

HYDROCODONE

- Schedule II now
- Lortab: 2.5,5,7.5 mg with 500mg APAP
- Vicodin: 5mg with 500mg APAP
- Vicodin ES: 7.5MG with 500mg APAP
- Norco: 5,7.5,10 with 325 APAP
- Zohydro ER: 10,15,20,30,40,50

CODEINE

- Schedule III
- Tylenol with Codeine, all have 300mg of APAP
- Tylenol #2 : 15mg
- Tylenol #3 : 30mg
- Tylenol # 4 : 60 mg

ORAL STEROIDS

- When oral steroids are used appropriately for a relatively short time they are very, very safe
- After all, they are basically a natural substance already found in the body
- Be aware of body weight when dosing

WHO DOESN’T GET ORALS, OR GETS THEM VERY, VERY CAREFULLY

- Diabetics
- Patients with stomach problems / ulcers
- Patients with active infection
- Pregnant women

WHAT CAN THEY DO THAT'S BAD?

- Almost nothing in the short term! Most issues require long term use
- Increase Na +, decreased K leading to fluid retention
- Hypertension
- Elevate blood glucose levels
- Stomach pain and ulcers (stomach upset with short term use)
- Insomnia, euphoria, psychosis (possible with short term use)
- Thin skin / bruising
- Osteoporosis
- Increased ICP
- PSC's (far more commonly than topicals)
- Increased IOP (far less commonly than topicals)

WHAT CAN THEY INTERACT WITH?

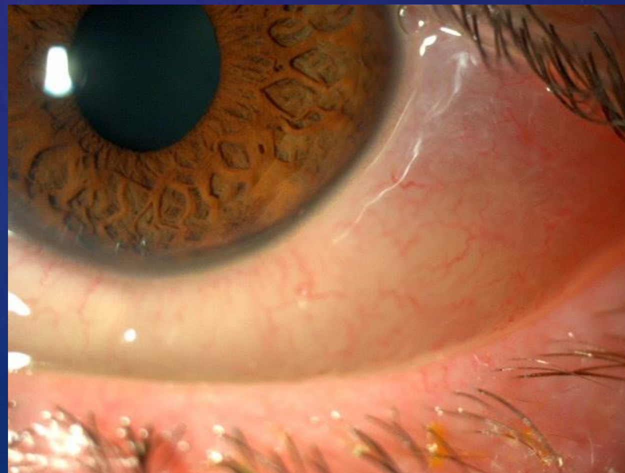
- Screw up glucose control
- ASA, Coumadin
- Digoxin
- Some antibiotics, anti-seizure meds, anti-TB meds (TB itself is a strong relative contraindication)

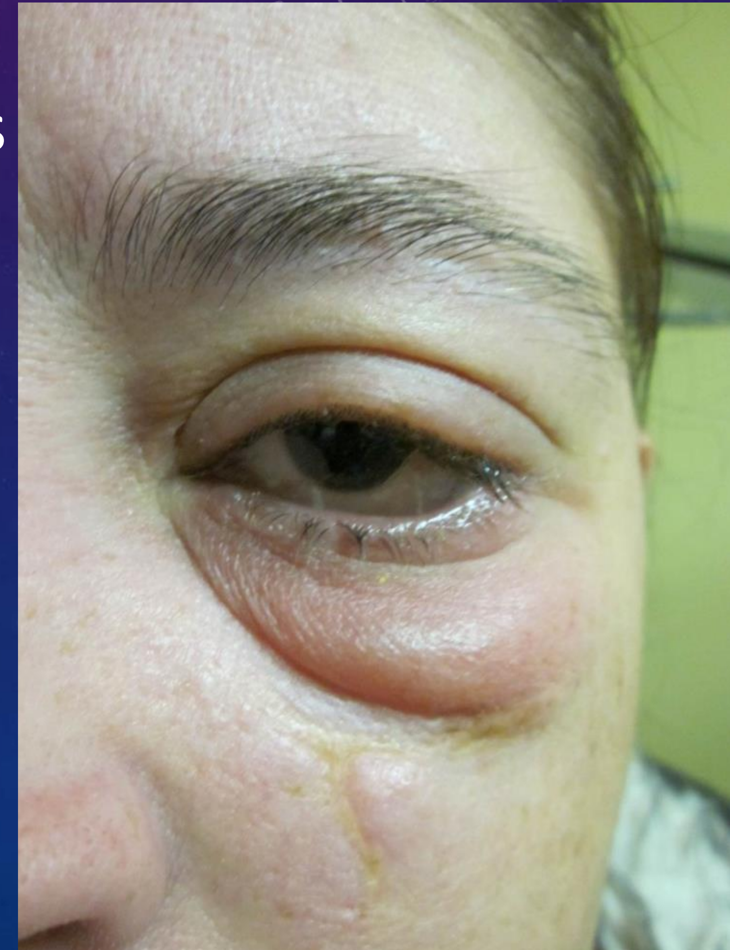
WHAT DO THEY DO THAT'S GOOD?

- Duh!............they decrease inflammation and therefore inflammatory sequelae

WHAT CAN WE USE ORAL STEROIDS FOR IN EYE CARE?

- Contact dermatitis / allergic response of the eye lids
- Reaction to insect bite or sting on the eye lids
- Recalcitrant CME
- Recalcitrant uveitis, especially bilateral or vitritis
- Choroiditis / retinitis
- Scleritis





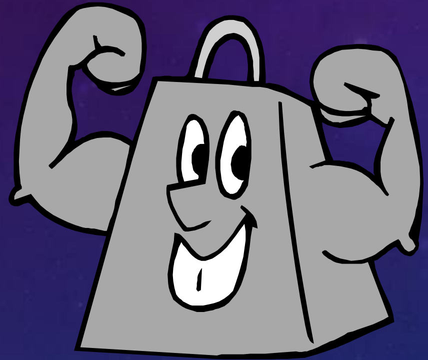
USES OF ORALS IN EYE CARE

- Myasthenia Gravis
- Inflammatory orbital pseudotumor
- Thyroid eye disease / Grave’s ophthalmopathy
- Optic neuritis (but not by themselves!)
- GCA
- DLK post LASIK (in conjunction with topicals)

OCULAR SIDE EFFECTS OF ORAL STEROIDS

- These are well known……………PSC's and increased IOP
- IOP increases are rare, but can occur with very long-term use
- PSC's are not rare!
- 10 mg per day or less for one year or less has almost no chance of PSC formation
- 16 mg per day or more over several years has a 75% chance of PSC formation
- Overall, general population has a .5% chance of PSC development while those on long term oral steroids have a 30% prevalence (across doses)

ORAL STEROIDS



- Oral steroids are generally prescribed in one of two ways……….
- 1) Medrol dose pack (methylprednisolone)
- 2) Prednisone 10mg tablets

COMPARISONS

- When it comes to suppressing the HPA (hypothalamic-pituitary-adrenal) axis………….
- 25mg Cortisone = 20mg Hydrocortisone = 5mg Prednisone = 4mg Triamcinolone = 4mg Methylprednisone = .75mg Dexamethasone
- Potency essentially follows this order but in reverse
- Body produces an amount of cortisone that equals 5mg of prednisone per day

MEDROL DOSE PACK

- Available in different strengths
- Most commonly used is a package of 21, 4 mg tablets(2 mg is available)
- Six are taken the first day, then one less each day thereafter (6-5-4-3-2-1 = 21 tablets)
- Self tapering and little to no suppression of the HPA axis
- In eye care, really only strong enough and long lasting enough for treatment of lid reactions

PREDNISONE*

- Most common dosing is to give the desired amount in 10 mg tablets (need 40 mg, take 4 pills)
- Is available in 1, 2.5, 5, 10, 20, and 50 mg tablets
- Best choice for most of our desired uses in eye care
- Potent and flexible

DOSING

- Up to 60 mg, take entire dose in the morning
- Over this amount take ½ in morning, ½ in evening
- As previously mentioned, Medrol dose pack self tapers
- With prednisone, after relatively short course at full desired strength, taper by ten milligrams every other day

DOSING

- An alternative approach is to give twice the desired dose every other day then don’t taper. Only for short term use, not long term
- Theory is that anti-inflammatory properties remain high but suppression of HPA axis is much, much less
- For long term use taper must be very slow
- As OD’s we rarely would be involved in the long term prescription of oral steroids

THE END!

- Questions?