TAKING THE MYSTERY OUT OF ORAL MEDICATIONS

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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 / doxycycline 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, Ketoconozole, 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 ANTVIRALS-DOSING ZOSTER**

- **Acyclovir**: 800mg 5X day for 10 days
- **Famvir**: 500mg TID x 1 week (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 mg 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?