Steroids and Controlled Substances
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Disclosure

- Presenter is on speakers panel of Alcon, Allergan, Abbott, Bausch + Lomb, Inspire, STAAR Surgical, Odyssey
- Past-President of the Optometric Council on Refractive Technology (OCRT)
- Presenter has NO financial interest in any products mentioned
- Except he does have stock in a certain coffee company...
Introduction

Optometry’s use of steroids

Controlled Substances
  - When are they prescribed
  - Risks

Conclusion

NSAID’s

NSAIDs are effective against postoperative inflammation and pain

NSAID use may be associated with:
  - Slow or delayed healing
  - Increased bleeding time
  - Keratitis

Potential for cross-sensitivity in patients sensitive to acetylsalicylic acid, phenylacetic acid derivatives, or other NSAIDs

Currently Available NSAID’s

- Voltaren Ophthalmic® 0.1%
- ACULAR® 0.5%
- Bromday® 0.09%
- Nevanac® 0.1%
- ACUVAIL™ 0.45%
Who is at risk for NSAID AE

- Age ≥ 65 yo
- Any comorbid medical disease
- Use of corticosteroids
- H/O peptic ulcer or GI bleed
- Use of alcohol
- Anticoagulants

Steroids

Corticosteroids have a wide range of anti-inflammatory effects.

- They are indicated for the treatment of steroid-responsive inflammatory conditions of the palpebral and bulbar conjunctiva, cornea, and anterior segment of the globe.

Corticosteroid use may be associated with:

- Increased intraocular pressure
- Decreased wound healing
- Aggravation of infection
- Cataract formation

Corticosteroids for Ocular Inflammation
Corticosteroids

- Bind to nuclear receptors that bind DNA and regulate gene expression
- Interfere with transcription regulators (e.g., AP-1 & NF-kB)
- Most inflammatory pathways:
  - cytokine production
  - lipid mediators (PGs)
  - cell adhesion molecules
  - leukocyte trafficking
  - vascular permeability
- Ring modifications alter potency and membrane-stabilizing effects

Guidelines for Steroid Use

- Prescribe the drug, dosage and frequency of administration based on the severity of the inflammation
  - Ex: Acute inflammation treat every hour
- Avoid the QID-trap!
  - Don’t be stingy—be aggressive
- Accurate diagnosis is crucial before prescribing

Old School Steroid Theory

- When to avoid steroids:
  - When treating an acute bacterial or fungal infection
  - In the presence of a “significant” epithelial defect
  - When you are unsure of the diagnosis
Steroid Prescribing Guidelines

- The goal is to restore normal tissue integrity
- Begin tapering ONCE the inflammation is under control
  - Drops used for a week or less do not need to be tapered
  - Taper to allow patient's body to respond and avoid rebound
    - Rule of thumb: QID X 4 days, TID X 3 days, BID X 2

Steroid Prescribing Guidelines

- High dosages over short time frame are safe
- Monitor the IOP
  - After 2 week check every visit
- Long term steroids can create a hospitable environment for fungal infections

Steroid Use Risks

- Elevated IOP
- Posterior Subcapsular Cataracts
- Increased Susceptibility to Infections
Steroid Induced IOP Rise

Well controlled inflammation with tapering underway-IOP should self limit and no treatment is necessary

- Begin a glaucoma agent in concert with steroid until inflammation is under control
- Inflammation improving-switch to lesser steroid
  - Rimexolone 1% (Vexol, Alcon)
    - Decrease tendency to increase IOP
    - Steroid suspension with minimal need to shake to re-suspend
    - QID dosing X 2 Weeks and reevaluate

TobaDex® ST

tobramycin/dexamethasone ophthalmic suspension
- 0.3%/0.05%
- Suspension designed to enhance bioavailability to the target tissues
  - Xanthan Gum
    - In the bottle
    - Xanthan Gum and tobramycin form ionic interaction
    - On the surface
    - Tears interrupt ionic interaction

Durezol

Difluprednate 0.05% ophthalmic emulsion
- 5 ml bottle
- Developed as an emulsion
- No shaking required
- BAK-free
- Uses sorbic acid as a preservative
Difluprednate Molecule

Prednisilone molecule modified to increase:
- Potency
- Penetration
- Power

Lotemax Ointment

Lotemax ointment indicated for the treatment of post-operative inflammation and pain following ocular surgery

- Apply four times daily
- 3.5 gram tube, loteprendol etabonate ophthalmic ointment, 0.5%

Other Optometric Steroid Uses

- Allergy
- MGD
- Dry Eye
- Iritis
- Corneal Infiltrates
- etc...
Controlled Substances

The Use of Controlled Substances

- Treatment of illness, control pain and disease
- Have the capacity to cause
  - Addiction
  - Injury
  - Impairment
  - Death
- Practitioners need to regulate the amount, use and the frequency of the prescription
“A substance subject to the Controlled Substances Act (1970) which regulates the prescribing and dispensing according to abuse, psychological and physiological abuse, public health, pharmacological effect and precursor to other controlled substances”

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**Schedule I**

- High potential for abuse
  - no currently accepted medical use in US
  - lack of accepted safety under medical system
- No Rx can be written

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**Schedule II**

- High potential for abuse
- Current accepted medical use in treatment in US or current use with severe restriction
- Abuse may lead to severe psychological and physical dependence
Schedule II
- Cocaine
- Ritalin
- Methadone
- Oxycodone
- Seconal

Schedule III
- High potential for abuse, less than I & II
- Abuse of drug or substance may lead to moderate or low physical dependence and high psychological dependence

Schedule III
- Anabolic Steroids
- Barbituates
  - Surital
  - Pentothal
- Hydrocodone/codeine
Hydrocodone

Hydrocodone Bitartrate
- analgesic (pain relief) and antitussive (cough)
- Vicodin
  - 5mg hydrocodone/500mg acetaminophen
- 4 hour half-life
- 45-60 min before effect
- Side-effects
  - dizziness, itching, nausea, sweating, drowsiness, vomiting

Codeine

3-methylmorphine

Combined with acetaminophen
- Tylenol-1, 2, 3, 4
  - 8, 15, 30, 60 mg of Codeine/300 mg acetaminophen
- Analgesic/antitussive/antidiarrheal
- Side-effects
  - euphoria, itching, nausea, vomiting, dry mouth, miosis

Schedule IV

- Low potential for abuse relative to drugs in III
- Abuse of the drug may lead to or substances may lead to physical dependence or psychological dependence relative to the drugs or other substances in III
Schedule IV
- benzodiazepam
  - Xanax
    - panic and anxiety
  - Valium
- Barbituates
- Phenobarbital

Schedule V
- Lower substance abuse potential than IV
- Abuse of the drug may lead to limited physical dependence or psychological dependence relative to the drugs in IV

Schedule V
- Cough Suppressants with Codeine
  - Cheratussin AC
  - Phergan/Codeine
- Preparations with small amounts of opium
  - Lyrica
- Anti-diarrheal
Commonly Rx’d Controlled Drugs

1. Hydrocodone (Vicoden)
2. Alprazolam (Xanex)
3. Oxycodone (OxyContin)
4. Codeine
5. Clonazepam (Klonopin)
6. Zolpidem (Ambien)
7. Lorazepam (Ativan)
8. Diazepam (Valium)
9. Propoxyphene (Darvocet)
10. Pregabalin (Lyrica)

No-Schedule
Still Dangerous...

Michael Jackson’s Meds
**Profonol**

- Early available anesthetic
- Short acting sedative-hypnotic
- Astra Zeneca
- Side effects
  - Mood swings, dizziness, drowsiness
- Not federally controlled
  - No restrictions
  - Any doctor can prescribe
- Subanesthetic levels create a “high”
- Not indicated for insomnia

**Case Examples**

**Move...**

33 y.o. IT manager presents with a red painful eye

“The eye has been red for 1 week and it does not seem to be getting better”

“The E.R. doctor put me on this (gentamycin) and I think it is worse”

Whatcha ya thinkin?”
“Press start to turn off..”

- Further investigation finds this is not the first event
- No discharge or tearing
- Pain is more on movement than in lighting situations
- During your exam you dilate the patient with 2.5% phenylepherine and ......poof...the red is gone!

Episcleritis

- Episclera
  - Thin vascular fibroelastic tissue covering the sclera
  - Limits excessive eye movements
  - Visible episcleral vessels are veins
- Episcleritis
  - 30% have associated systemic condition
  - Majority are idiopathic
  - Attacks can follow stress

Episcleritis

- Acute in onset (as soon as a half-hour)
- Unilateral
- Tendency to recur
- Rarely tender to touch
- Symptoms:
  - Heat, prickling, FB sensation
  - Injection is often sectorial and seen within the interpalpebral fissure
Scleritis

- Relatively rare
- 40-65 y.o.
- Women affected > men
- Bilateral 52%
- Causative factor is often attributable
  - Immunologic basis as cause
  - Always involves the episclera
  - Remember your phenylephrine
- Treat the cause. Do not delay!

Joy and Pain...

Treatment

- Usually runs 10-21 day course
- Topical Steroids
  - Flurometholone alcohol (FML, Allergan)
  - Flurometholone acetate (Flarex, Alcon)
  - QID dosing of medication
  - Follow-up in 2 weeks or until resolved
- Avoid using topical antibiotic-steroid combinations
- Pain relief
  - Vicodin
  - Tylenol 3

Another Case
What is that?

36 y.o. truck driver presents with cloudy vision and pain in the right eye

The eye is red without any discharge

"I noticed a white spot on the colored part of my eye"

"It started right after this blister on my lip..."

Anyone?

Looks Like ...a Jack?

HSV Keratits

Dendritic epithelial keratitis or ulceration produced

Reactivation of the latent virus results in herpes labialis (frozen blisters)

- Shock
- Fever
- Immunosuppressive agents
- UV lights
- Etc...

26% of herpetic keratitis patients will have a second attack

43% in cases greater than 2 or more attacks
HSV Keratitis

- Stromal HSV assumed to be result of immune system of host
- New data suggests different strains of HSV that produce antigenic glycoproteins
  - Stimulate a severe host inflammatory reaction
  - Stromal and epithelium

HSV Disciform Keratitis

- Disciform (stromal) keratitis is usually self-limiting
  - Weeks to months
  - May appear as inflammation of the stroma
    - Discoid edema
    - Opacity
    - Necrotic
    - Severe iritis

HSV Disciform Keratitis

- Treatment
  - Often clinically challenging
  - Corneal destruction
  - Neovascularization
  - Elevated IOP
  - Intraocular inflammation
HSV Disciform Keratitis

- Topical Steroids pulsed with Antiviral
  - Prednisolone phosphate/Durezol TID-QID
  - Zirgan (Bausch + Lomb)
  - Viroptic (trifluridine 1%, Burroughs Wellcome) TID
- Taper steroid to qd and D/C antiviral
- Monitor IOP
- Pain meds

Conclusion

- Know the effects of the meds you are using
- Steroids can reduce the inflammatory load
- Controlled substances carry side-effects
  - use with caution

Thank You