Steroids
Feast or Famine?

Elliot M. Kirstein, OD, FAAO
Harper’s Point Eye Associates
Cincinnati, Ohio

Agenda
• History of steroids
• Benefits
• Risks
• Systemic application
• Ocular application
• Cases

Financial Interests
• Alcon – speakers alliance
• Optovue – speakers alliance
• Reichert – speakers alliance
• Aerie – speakers alliance
• Haag Streit – speakers alliance

History
• The discovery of the class of corticosteroid called glucocorticoids began in the 1920’s.
• In the 1920’s, rheumatoid arthritis and other arthritides were thought to have an infectious cause.

• By 1938, Dr. Philip Hench from the Mayo rheumatic disease service, noticed a 65yo doctor with arthritis that improved the day after becoming jaundiced.
• He later noted 31 other cases of joint pain resolving, to some extent, with pregnancy, infections, and post-surgically

• The scientific community then abandoned the infectious theory and started to look at the adrenal glands — substance X
• Multiple compounds were isolated from animal adrenals.
• Compound ‘E’ seemed to work particularly well in animals.
• World War II was progress, and so money was lacking, which left them frustrated.
• Merck gave multiple researchers around the world the remaining 9 grams of compound ‘E’ – [make it work or drop this idea]

In September 1948, they injected their first human patient.
• A 29-yo female with severe, erosive arthritis that was chair-bound (unable to ambulate)
• After 4 days post-injection of compound E, she was able to walk out of the hospital.

In 1950, Dr. Philip Showalter Hench won the Nobel Prize in Medicine.

Steroids in Medical Therapy
• A foundational element in most medical therapies is the control of inflammation.

Inflammation causes harm to tissues and keeping it at bay reduces scarring and loss of function.
• Reducing inflammation reduces patient symptoms.

Applications
- Allergy
- Infection
- Dry Eye
- Keratitis
- Injury
- Uveitis
- Peri operative

Ophthalmic Applications
- Allergy
- Infection
- Dry Eye
- Keratitis
- Injury
- Uveitis
- Peri operative
Ophthalmic Steroids

- Under prescribed
- Under dosed

Artificial tears and the “Ivory Tower”

Steroids and the Robo Doc
The Play

by
Elliot M. Kirstein, OD, FAAO

ACT I
“My eyes are so dry that I want to tear them out!”

ACT II
This scratch on my eye is killing me!

ACT III
Dr., my eyes are on fire!
Steroid Risks

- Increased IOP
- Immunosuppression
- Cataractogenesis

Think about it……..

If a person is uncomfortable enough to schedule a doctors appointment, they must be very uncomfortable.

They are seeking immediate relief.

What kind of dummy would bring a knife to a gunfight?

What’s the difference?

- Flurometholone 1% (FML) – surface applications, less IOP effect, poor penetration
- Loteprednol (Lotemax) – surface and internal applications, less IOP effect
- Prednisolone Acetate 1% (Pred Forte) – surface and internal applications, more IOP effect
- Difluprednate (Durezol) - surface and internal applications, most powerful (2x pred), most IOP effect

Ocular Allergy

- They’ve tried “Visene”
- They’ve tried “tears”
- They’ve tried Zyrtec, Benadryl…..

Ocular Allergy Therapy

Consider:

- mast cell / antihistamine drop ***
- systemic OTC
- fluoromethalone or loteprednol q4h ***
- topical cortisone 1% with lid involvement
- Med–Pak for severe / seborrhea
Infection

- Bacterial conjunctivitis / keratitis is rare
- Most are viral / inflammatory

Harper’s Point Eye Associates

It all started here – “Blephamide” circa 1974

Keratitis

- Cover with antibiotic
- Sooth with tears
- Treat with steroids

Keratitis

Sterile infiltrate or infectious ulcer?

staph exotoxin

- An exotoxin is a toxin secreted by bacteria.
- An exotoxin can cause damage to the host by destroying cells or disrupting normal cellular metabolism. They are highly potent and can cause major damage to the host.
Marginal “ulcer”

- Antibiotic – steroid
- q3h first day
- Follow with q4h x 6 days
- Consider lid therapy
- Counsel – extended wear
- Discard – case and lens
- Suggest – daily lens

Epithelial Herpes Simplex primary

- Zirgan
- Valtrex
- Tears
- NO STEROIDS

Stromal Herpes Simplex Uveitis

- History of previous primary epithelial
- Possible chamber reaction
- Risk neurotropic ulcer

Stromal Herpes Simplex Uveitis

- Zirgan
- Valtrex
- Tears
- STEROIDS (topical)
Herpes Zoster

- Zirgan
- Valtrex
- Tears
- STEROIDS (topical and systemic)

Send this one away!

central location
chamber reaction
hypopyon

Dry Eye basics

- Compromised tear causes chronic surface trauma
- Trauma causes inflammation
- Inflammation is treated with anti-inflammatory medications
  - tears & supportive therapy
  - cyclosporin – lifitegast
  - tetracyclines
  - antibiotic ointments
  - steroids

Dry Eye Jump Start

- Restasis or Xiidra bid
- Lotemax qid x 14 days then bid x 14

Injury - treatment goals

- Promote healing
- Prevent infection
- Minimize pain

Injury - treatment

- healing / pain - STEROIDS
- infection – antibiotic prophylaxis
- pain – topical and oral NSAID’s / tears
Conjunctival Injury
• healing / pain - STEROIDS
• infection – antibiotic prophylaxis
• pain – topical and oral NSAID’s / tears

Corneal Injury
• healing / pain - STEROIDS
• infection – antibiotic prophylaxis
• pain – topical and oral NSAID’s / tears
• Bandage contact lens

Lid and Adnexa Injury
• healing / pain - STEROIDS
• infection – antibiotic prophylaxis
• pain – topical and oral NSAID’s

Oral Steroids
• Severe allergy
• Herpes Zoster

Primary Simplex Keratitis
• Zirgan q3h
• Valtrex 2000 mg /day
• No Steroids

Stromal Herpes Keratitis
• Zirgan q3h
• Valtrex 2000 mg /day
• Pred Forte 1% q4h
Seborrheic Contact Dermatitis

- Hydrocortisone cream 1% BID
- A safer, effective treatment are topical immunomodulators, such as tacrolimus (Protopic)
- Zaditor – BID
- Zyrtec – or equivalent
- Medrol Pak – for severe presentations

Allergy workup

Uveitis

- Under diagnosis and under treatment is number one failure
- Use strongest topical STEROIDS available
- QID initial therapy NEVER indicated
- Cyclo when greater than 1+
- Consider Valtrex for possible herpetic etiology (especially with elevated IOP)

PERI OPERATIVE

- Promote healing - STEROIDS
- Prevent infection - antibiotics
- Minimize pain - STEROIDS / tears / NSAIDS

STEROIDS and IOP

- Fluorometholone .1% (FML) – less IOP effect
- Loteprednol (Lotemax) - less IOP effect
- Prednisolone Acetate 1% (Pred Forte) – more IOP effect
- Difluprednate (Durezol) - most IOP effect
Be on the alert!

- “SOFT” steroids
- Nasal and Inhaled steroids
- Injected steroids
- Chronic systemic steroids

For the treatment of postoperative inflammation and pain following ocular surgery.

2 times greater penetration to the aqueous humor due to the submicron particle size

SubMicron technology allows for less frequent application when compared with Lotemax Gel.

Case #1
Glaucotomycyclic Crisis
Posner-Schlossman Syndrome

Visit #1
10/18/2007
48 y/o Caucasian male

- OcHx – High pressures in past exams no treatment, father (deceased) had glaucoma.
- MedHx – NIDDM – poor control of sugar, no family Hx of DM, A1C = 8.5?
- V/A OD = 20/20-, OS = 20/20- with best correction
- IOP - OD = 37 mm, OS = 39 mm
- Fundi - 2+ ma’s, cotton wool, & blot hemorrhage, no IRMA or DME OU
- Nerves - small, c/d OD = .4, OS = .5
- Threshold Fields – inferior nasal depression OS
- HRT – Moorfield’s analyses – outside normal limits in 4 sectors OD, normal OS
- Gonio – angles 4+ open 360 degrees OU trace tarbecular pigmentation
- CCT - 614 microns OD, 664 OS
- 30-2 – Inferior nasal depression - OD
Assessment:
- NPDMR OU
- POAG OU
- High PAK values

Plan:
- Detailed discussion of compliance
- Rx OU qpm latanoprost .005% + q12h brimonidine .1%
- RTO in 2 weeks to repeat IOP
- Schedule retinal evaluation
- Telephone internist to discuss assessment and plan

Visit #2
No change in ocular or medical Hx
11/2/2007

IOP – OD 25, OS 24

Assessment: reasonable progress in IOP reduction with meds

Plan: RTO 6 weeks to follow up

Visit #3
12/29/2007 11:00AM
Painful OS past 7 days with blurry vision

- V/A – OD = 20/20-, OS = 20/70 with PH
- IOP – OD = 22, OS = 45
- Conjunctiva - OS 3+ limbal injection
- OS pupil - peaked @12:00 fixed, posterior synechiae, OD = reactive
- A/C OS – 4+ cells and fibrin without PAS
  Angles open 360 degrees OD & OS
- Cornea – 2+ edema with folds OS only

Assessment: glaucomatocyclic crisis – OS Rule out herpetic

Plan: (in office)
- Discontinue latanoprost – OS
- Combigan q 30 minutes OS
- cyclogel 2% q6h OS
- acetazolamide 1 X 500 mg PO
- pred forte 1% OS q1h
- Consider valtrex
- Monitor IOP
2:00 PM

• V/A = unchanged
• IOP = OD – 21 mm, OS = 29 mm, posterior synechiae broken, pupil dilated
• Patient reported pain somewhat reduced

New Plan

• Combigan OS 1gtt q12h
• Acetylsalicylic acid PO 250 mg q12h
• Pred Forte 1% 1gtt q1h OS
• Cyclogel 2% q6h OS
• RTO 24 hours

Visit #4
12/30/2007
“eyes feel better”

• V/A = unchanged
• IOP - OD = 22 mm, OS = 28 mm
• A/C = 3+ cells (synechia broken) pupil round & dilated

Visit #5
1/2/2008

• V/A - unchanged
• IOP – OD = 20mm, OS = 22mm
• A/C – 2+ cells

Discussion

• ongoing follow up & care
• acetazolamide and serum glucose ?
• methazolamide?
• inflammation and prostaglandins
• herpetic risk?

Case #2
Systemic Steroid Induced Glaucoma
Visit #1
- 2/5/2007 Routine exam 60 y/o Caucasian female
- Family Hx positive POAG (sister), Meds- QD 81 mg PO aspirin
- OD = 20/25, OS = 20/25
- OD = 19mm, OS = 20mm
- Open angles
- .35 c/d OD & OS
Plan: Rx spectacles & RTO 1 year, discuss family Hx glaucoma and early cataracts

Visit #2
1/3/2008 11:30 AM
Left eye has been sore for 2 weeks and OS vision seems a little blurry
- V/A with Rx – OD = 20/25-, OS 20/30-
- IOP – OD = 40mm, OS = 66mm
- conjunctiva white OU, corneas clear
- A/C angles grade 2+ open 360 degrees OD & OS, no A/C reaction
- C/D - OD .45     OS .65
Plan:
- Combigan (timolol .5% + brimonidine 2.0%) q 30 minutes OU
- Latanoprost X 1 OU
- Acetazolamide 500 mg PO X1
- Monitor IOP

1/3/2008
- Medical Hx – Fibromyalgia Dx with Tx 10 Mg PO qd prednisone ongoing, which was supposed to be tapered & discontinued by 11/15/2007, but patient continued with pred to “feel better over the holidays.”
- Impression: IOP response (steroid induced glaucoma) resulting from oral steroid abuse.

1/3/2008
- 12:30 PM
- IOP – OD = 20mm, OS = 23mm
- Plan: Rx qpm latanoprost OU, Combigan q12h
- Monitor IOP
Visit #3
1/4/2008 10:00 AM
patient reports “significant headache”

- IOP – OD = 18mm, OS = 20mm
- HRT3 images show possible NFL changes from baseline exam
- Threshold field depression OS>OD

Assessment:
- Excellent resolution of increased IOP
- Headache from oral CAI
- Filed loss & subtle NFL changes secondary to IOP spike

Plan:
- Discontinue oral CAI
- SQ Combigan and latanoprost
- Call internist to discuss (encourage) aggressive oral steroid taper
- RTO 5 days to monitor IOP & meds

64 year old Caucasian male
routine examination

- No family Hx of glaucoma
- Reports statins and beta blockers Tx HBP and elevated blood lipids
- No other reported systemic problems

pertinent findings
- -5.00 OU = 20/20 OD and OS
- 4+ angles
- Full screening fields
- Small nerves with .35 c/d OU
- IOP 36 / 34
impression and plan

• Significant IOP risk with no significant field or nerve loss

• Rx qd prostaglandin (sample) and follow up in 2 weeks

2 week follow up / plan

• IOP 18, 19
• Call in Rx
• Schedule 3 month follow up

3 month follow up / plan

• Drops well tolerated
• No change in health vision or medications
• IOP 41 / 46
• Add BID dorzolamide timolol (sample) and f/u 2 weeks

2 week follow up

• IOP 18 / 21
• Call in Rx dorzolamide timolol and schedule follow up in 3 months
3 month follow up

- No reported change in health or medications
- IOP 35 / 38

Discussion with patient

- Review of surgical options
- Discussion of possible causes:
  - i.e. family history, medications……..

quarterly steroid injections to treat seborrhea

- “I thought you asked “am I taking any medicines?”

Discussion

- Steroid response from various types of steroid administration
  - “Soft” steroids

dermatologist

- Discontinued steroid injections……..
- Added Plaquenil 200 BID

Hidden steroids

- Injections
- Nasal strays
- “soft” steroids
Thank you!

Elliot M. Kirstein, OD, FAAO

Harper’s Point Eye Associates