Sorting Out Steroids

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Course Objectives

- Explosion of new steroid approvals broaden our therapeutic armamentarium
- Describe common office and surgical applications
- Consider strategies for optimizing patient outcomes
- Understand the relevance of various new formulations and the differences between them
- Consider drawbacks of conventional therapies
- Develop new paradigms for future patient care
- Sharpen clinical prescribing patterns

Breaking Old Steroids Sterotypes

- Steroids are dangerous
- Steroids should not be first choice
- Steroids have risky side effects
- Steroids should never be used in long term management
- Steroids must be slowly tapered
- Steroids are expensive
- All preparations of loteprednol are the same
- All preparations of prednisolone are the same
- New drugs are always more expensive than generic drugs

New Steroids Have Advantages

- More formulations of safer loteprednol etabonate
- Novel technologies to increase bioavailability, penetration
  - Submicron particle size
  - Mucous penetrating particles
- New indications – allergy, posterior uveitis, surgery
- New sustained drug delivery systems
  - Intraocular
  - Intracanalicular
- Less dose frequency
- Less need for other Rxs in peri-operative period
- Often less cost

Risk Factors For IOP Increase - Steroids

- Younger
- POAG or Family History of Glaucoma
- High Myopia
- Type 1 DM
- Angle Recession Glaucoma
- Relative strength of drugs
  - Difluprednate, prednisolone, dexamethasone higher risk
  - Loteprednol, fluoromethalone lower risk

Conventional Steroids

Dexamethasone 0.1%	Sol	Generic
Difluprednate 0.05% (Durezol)	emul	No
Fluorometholone 0.1% (FML)	sus, oint	Yes/No
Fluorometholone 0.1% (Flarex)	sus	No
Fluorometholone 0.25% (FML Forte)	sus	No
Prednisolone 1% (PF)	sus	Yes
Prenisolone 0.12% (PredMild)	sus	Yes
Prednisolone 1% (phosphate)	sol	Yes
Loteprednol 0.2% (Alrex)	sus	No
Loteprednol 0.5% (Lotemax)	sus, oint, gel	Yes, No, No

Tobramycin/Dexamethasone 0.3%/0.05%

- Indications – bleparitis, MGD, marginal keratitis etc
- Longer retention & bioavailability (XanGen vehicle)
- Dosage – q4-6h (and up to q2h x 1st 24-48h)
- Half the dose of dexamethasone compared to Tobradex
  - Similar tissue exposure
- Greater bactericidal activity than Tobradex
  - Killed >99% of S. aureus, even tobramycin and methicillin resistant strains
  - Tobradex killed 0 %
- Available as ***TobraDex ST***

Intracanalicular Dexamethasone Insert

- Indications – post-operative pain & inflammation
- Administration – inserted into the inferior punctum
- Preservative- free
- Sustained release up to 30 days
- Offers potential for less post-operative topical eye drops
- Available as ***Dextenza*** 0.4mg

Intraocular Dexamethasone Suspension

- Indications – post-operative inflammation
- Administration – intracameral, single dose, sustained release delivery system, behind irirs at end of surgery
  - 1st and only FDA approval
  - Precaution – Increased IOP
- Preservative- free
- Anti-inflammatory efficacy Day 1-30 days
- Offers potential for less or no post-operative topical eye drops
- Available as ***Dexycu*** 9%

Loteprednol suspension 1.0%

- Indications – post-operative pain & inflammation
- Suspension = shake 1-2 times only
- Dosage – BID
- BAK – 0.01%
- Mucous penetrating particle technology
  - Nano particle technology (MPP) enhances the penetration of steroid through the tear film
- Available as ***Inveltys*** 1.0%

Loteprednol suspension 1.0%

- Indications – post-operative pain & inflammation
- Suspension = shake 1 time only
- Dosage – TID
- BAK – 0.003%
- Submicron particle technology – increases bioavailability, dissolves faster, better penetration, less dosing frequency, better compliance, favorable safety profile (IOP)
- Glycerin for comfort, propylene glycol moisturizer
- Available as ***Lotemax SM 0.38***%

Loteprednol suspension 0.25%

- Indications – short term (>2weeks) treatment of DE
- Flares average 4-6/ year in chronic disease
- Rapid relief (1-2 days) of flares not adequately managed with ongoing maintenance therapies
- Suspension = shake 1 time only
- Dosage – QID
- BAK –
- Mucous penetrating particle technology (MPP) – drug delivery technology
- Available as ***EYsuVIS 0.25***%

Dexamethasone Intravitreal 0.7mg

- Indications – Diabetic macular edema, RVO (BRVO, CRVO), posterior uveitis (non-infectious)
- In-office, simple delivery via pars plana
- MOA – inhibits inflammatory cyctokines
- Benefit – 3 line gains in BCVA
- Contraindications – torn posterior capsule, glaucoma with CDR>0.8
- AE – increase IOP, RD, PSC, secondary OAG, endophthalmitis
- Available as ***Ozurdex***

Fluocinolone Intravitreal 0.18mg

- Indications – chronic non-infectious posterior uveitis
- In-office, simple delivery via pars plana
- Sustained release of drug up to 36 months w 1 injection
- Benefit – reduces uveitis recurrence at 6 and 12 months
  - "continuous calm"
- Contraindications – ocular infections, viral disease, VZV, HSV, mycobacterial
- AE – increase IOP, RD, choroidal detachment, PSC, secondary OAG, endophthalmitis
- Available as ***YUTIQ***

Important Tips for Prescribing

- Hit hard – don't suppress inflammation, eliminate it
- Start steroids BEFORE surgery to get therapeutic concentration at surgery
  - Symptom relief in DE
  - Faster VA recovery after surgery (patient expectations)
- DE flares
  - 4-6 flares per year in patient surveys
  - Loteprednol or fluorometholone are ideal choices for short term control of inflammation
    - Even patients on chronic medications will experience flares

Important Tips - Loteprednol

- Loteprednol is not a soft steroid; but a soft drug
  - Predictable metabolism to inactive metabolite after exerting therapeutic effect
  - Structurally a derivative of the primary metabolite of pred
- Loteprednol is useful in glaucoma surgery, MIGS, and refractive procedures where IOP is more of a concern
- Loteprednol is useful in steroid responders or concern of steroid response
- Excellent choice for chronic dosing (1-2 drops/day)
  - Some cant tolerate cyclosporin/lifitigrast
  - Sjogren's, rosacea, allergy, PK, HSV, VZV

Important Tips for Prescribing

- Combinations of intracameral or intracanalicular steroids with topical preparations is helpful for patients at risk for more severe inflammation after surgery
  - Uveitis, glaucoma surgery, MIGS combined with cataract
- Only 2 weeks of lifitegrast or loteprednol BEFORE surgery will meaningfully treat DE
- NO TAPER
- Sometimes brand is LESS expensive than generic
  - TobradexST v Tobradex

Thank you

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