Managing Ocular Inflammation

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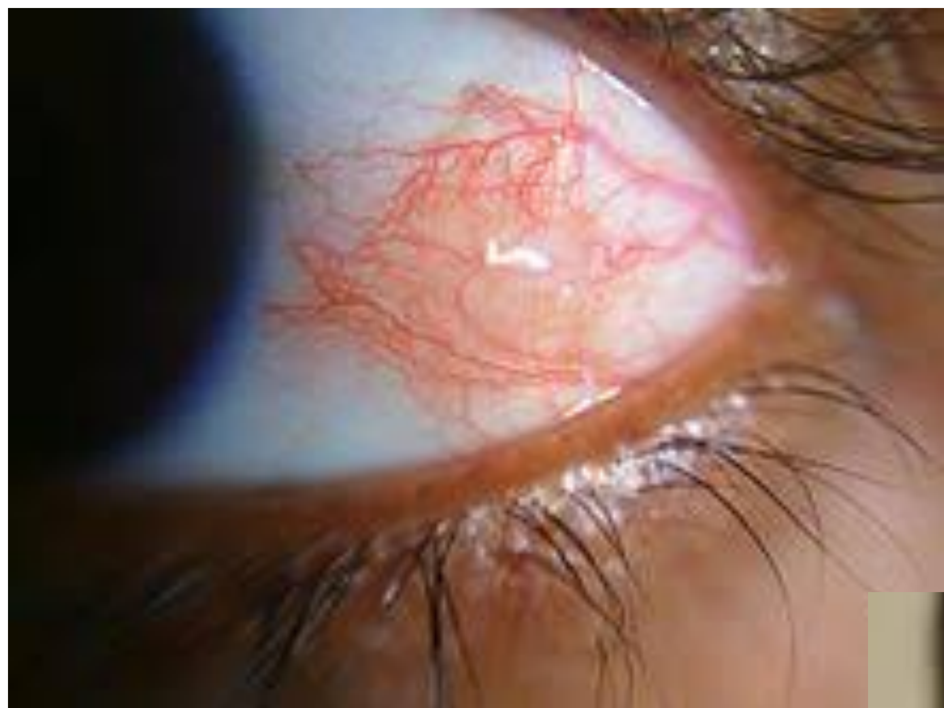
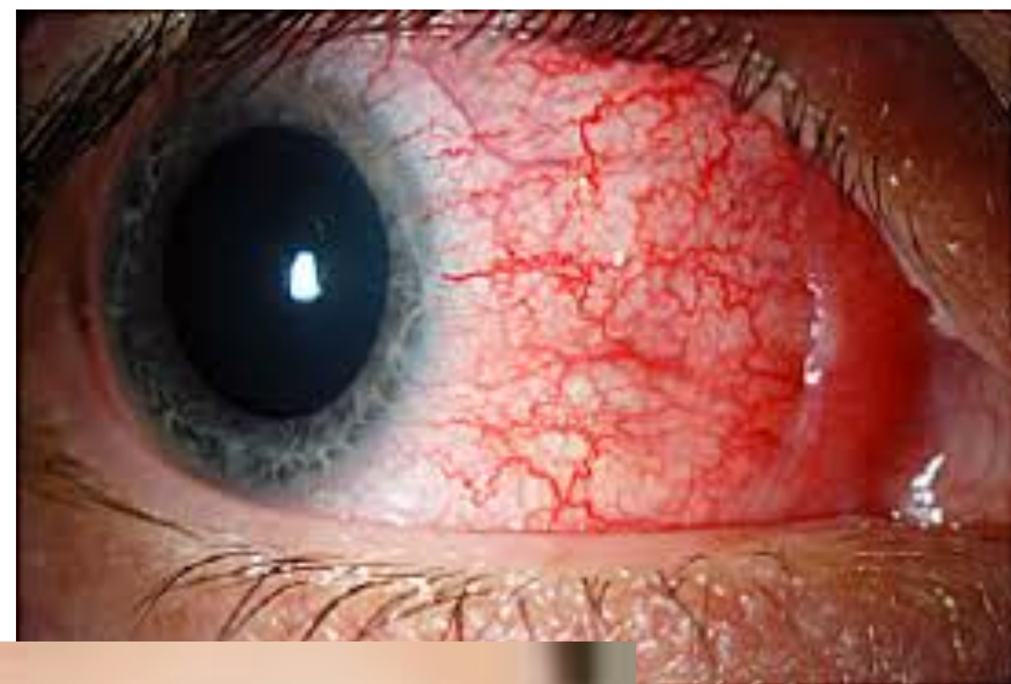
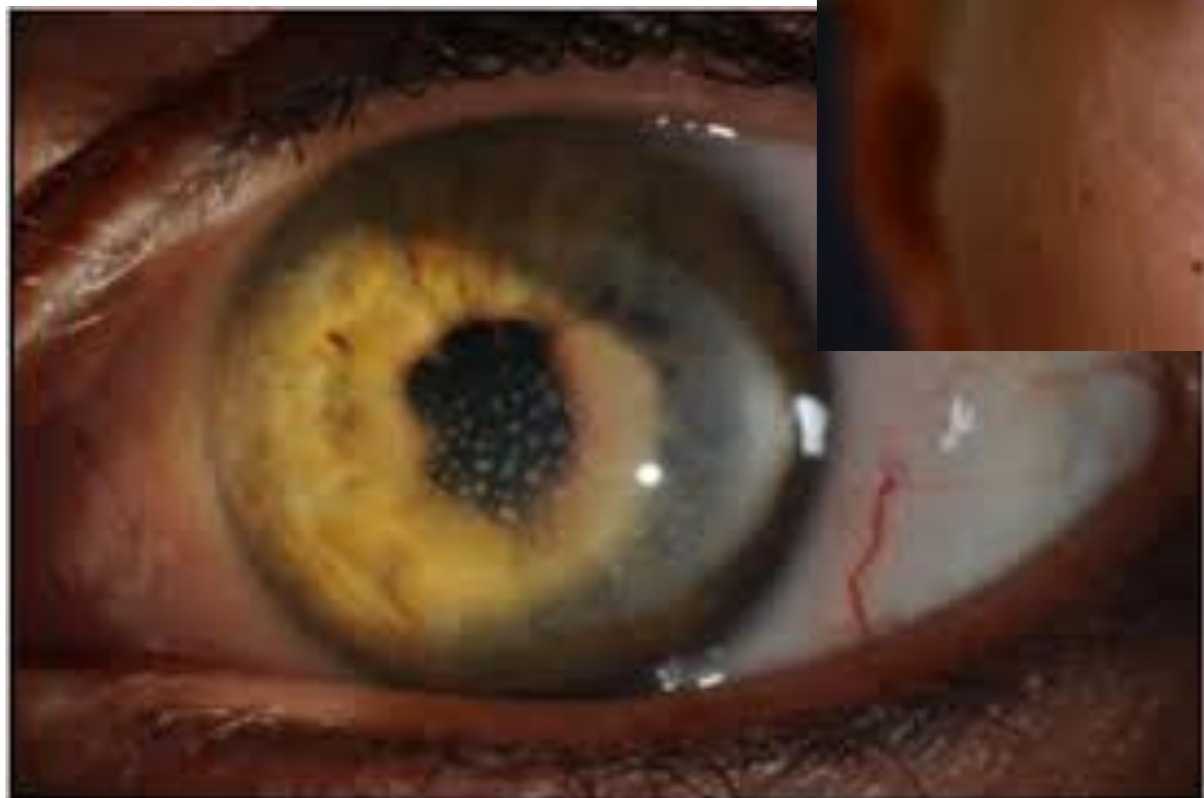
Ocular inflammation of the anterior segment

- Episcleritis, scleritis, conjunctivitis, keratitis, iritis, iridocyclitis
- Causes:
  - Idiopathic (50%)
  - Autoimmune- RA, IBD, HLA-B27, JIA,
  - Infectious- viral, bacterial, fungal,
  - Allergic/ atopy
  - Other: post-trauma, post-surgical, drug induced (NB modern cancer treatments)



Clinical approach to ocular inflammation

- History, examination and diagnosis of the disease entity
- Assessment of disease severity
- Knowledge of available medications and choosing the most appropriate agent
- Decide on treatment regime ie appropriate dose and duration

Aims of treatment

- Alleviate symptoms
- Elimination of inflammation
- Prevention of sequelae of the disease - corneal scarring, symblepharon, synechiae, cataract, glaucoma,
- Prevention of recurrence
- Limit side effects of therapies

Signs and Symptoms

- **Symptoms**:
    - pain/ ache
    - photophobia
    - blurred vision
    - brow ache
    - watering
    - eyelid oedema
    - acute, chronic or recurrent attacks

- **Signs**:
    - circum-limbal redness vs generalised injection
    - episcleral nodules/ phenylephrine blanching test
    - conjunctival follicles or papillae
    - keratic precipitates on endothelium- nature and number
    - anterior chamber flare and cells
    - posterior synechiae

Treatment

Ocular Treatments

- **TOPICAL CORTICOSTEROIDS**
- Topical cycloplegics
- Topical ocular hypotensive agents
- Periocular corticosteroids
- Intracameral/ intravitreal corticosteroids
- Other- depending on the specific cause eg antibiotics/ antivirals/ antihistamines

Systemic Treatments

- Oral/ intravenous corticosteroids
- Steroid sparing agents- methotrexate, cyclosporin, cyclophosphamide
- Biologic agents- infliximab, rituxumab, IFNa and b

Using corticosteroids

- Which agent or agents do I prescribe?
- At what dose frequency?
- For how long?
- What side effects do I need to be aware of?

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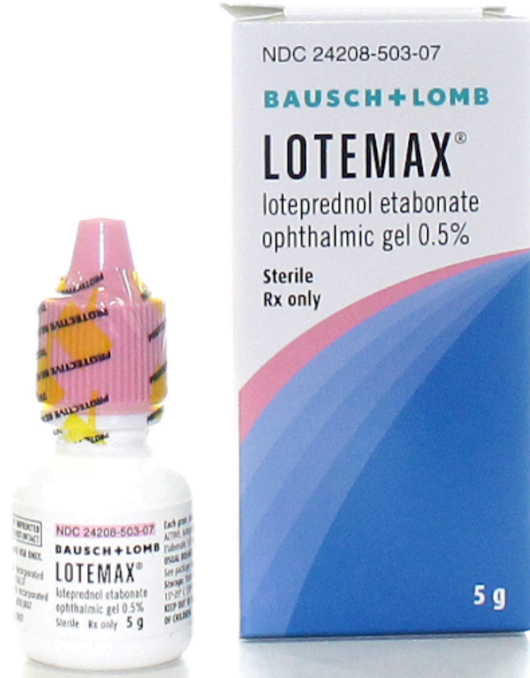
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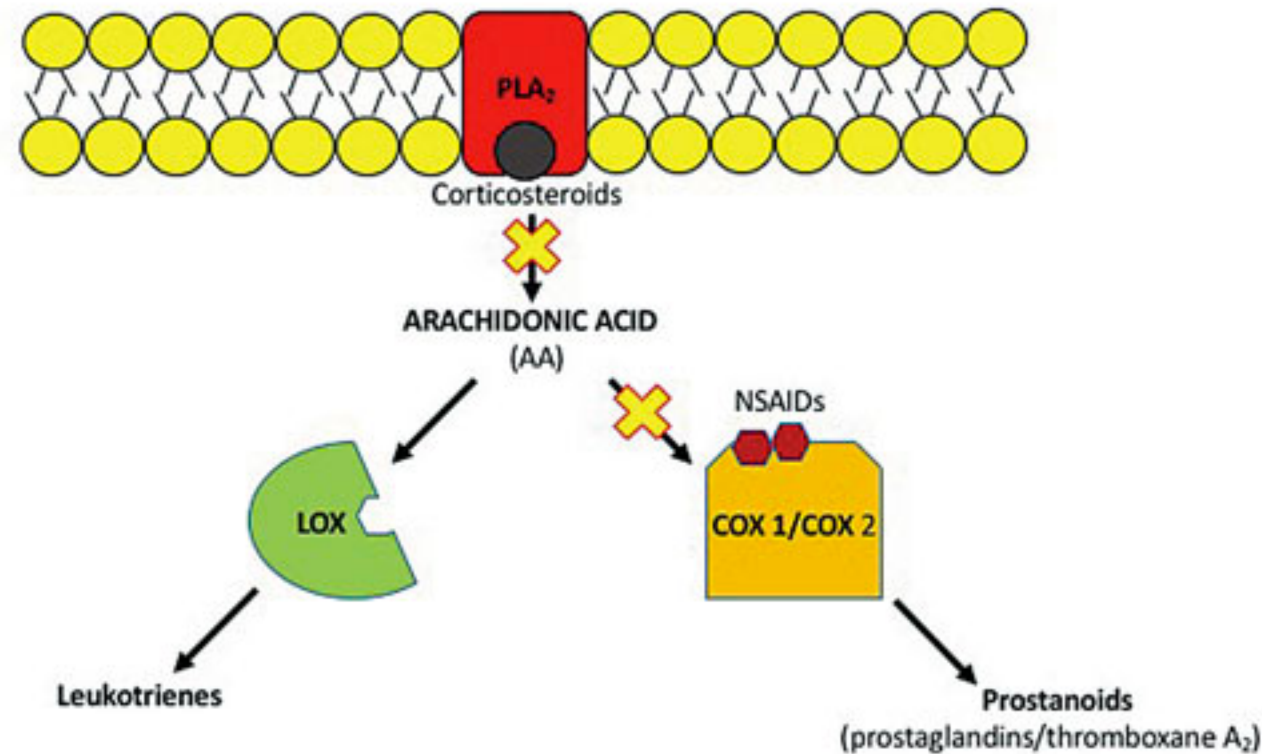
Topical corticosteroids



- Pharmacology: Exact molecular mechanism is unknown but thought to act via inhibition of phospholipase A2 pathway thereby inhibiting biosynthesis of potent inflammatory mediators such as PGs and leukotrienes

- Inhibits oedema, leucocyte migration, capillary proliferation, fibrin deposition and scar formation by affecting efferent limb of cell mediated immunity.

Relative potencies

Glucocorticoid	*Relative potency*	*Rise in IOP*
Dexamethasone 0.1%	24	22
Flurometholone 0.1%	21	6
Prednisolone 1%	2.3	10
Medrysone 1%	1.7	1
Tetrahydrotriamcinolone 0.25%	1.4	2
Hydrocortisone 0.5%	1.0	3

Practicalities of topical corticosteroid use

- Extremely effective in treating most anterior ocular inflammatory disease
- Caution in presence of active infection eg fungal, bacterial, viral, acanthamoeba
- Use with caution in pregnancy (class C) ie no adequate studies in humans. But we know systemic absorption is very minimal
- Poor penetration of posterior chamber in phakic eyes

Adverse Effects of Corticosteroids

- Local
  - Glaucoma
  - Cataract formation (PSCC)
  - Exacerbation of active or uncontrolled infection
  - Scleral melt
  - Eyelid skin thinning
  - Orbital fat atrophy

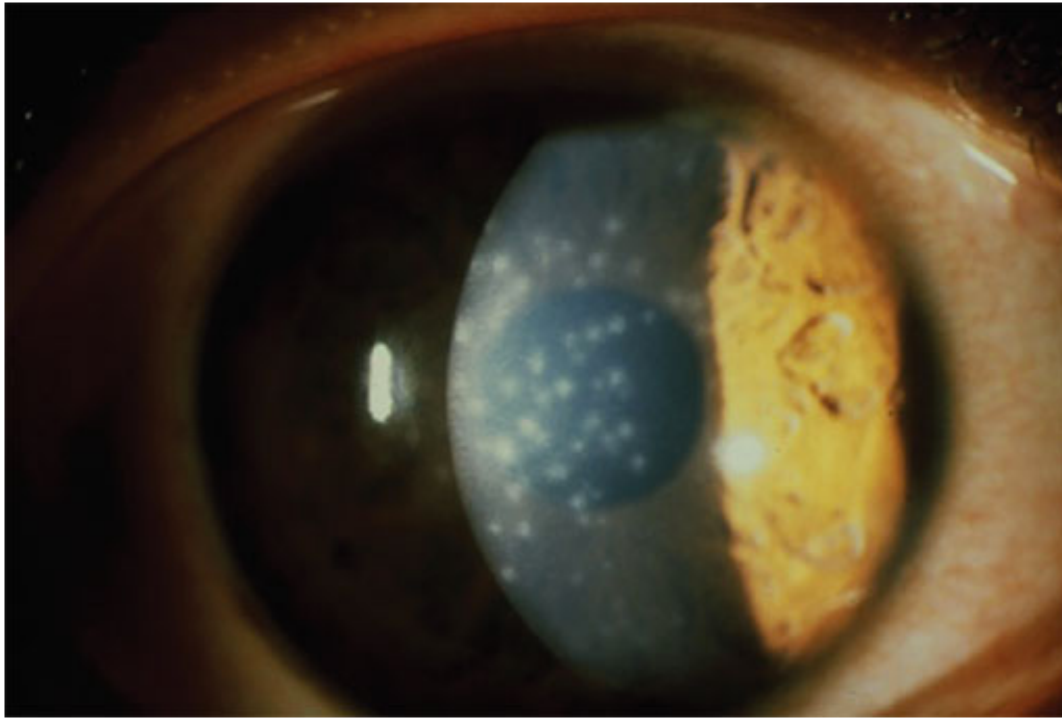
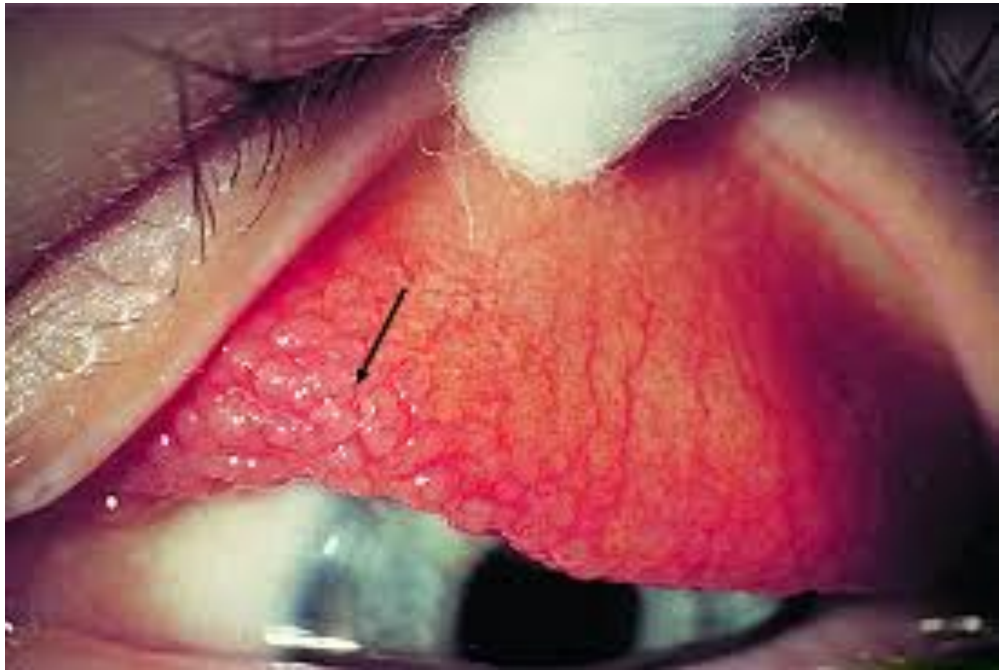
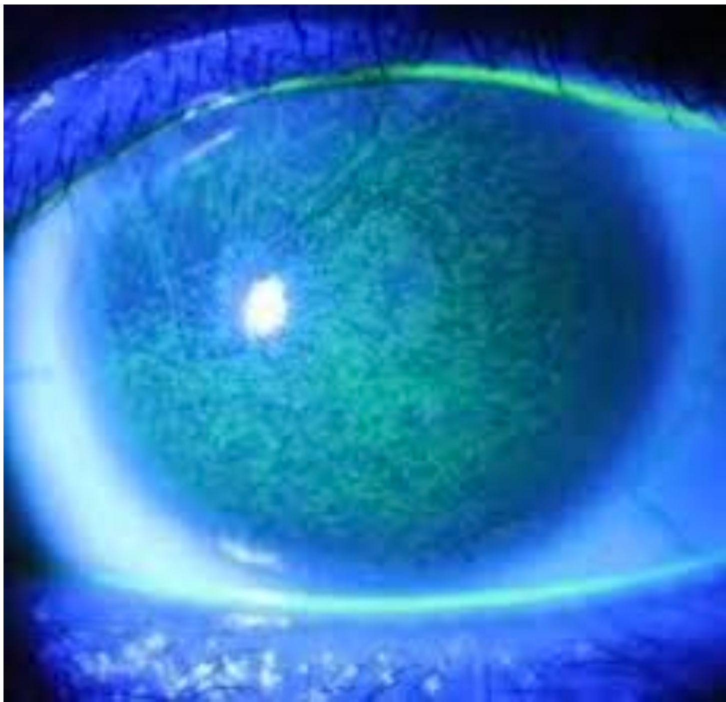
- Systemic
  - Suppression of HPA axis
  - Central obesity
  - Hyperglycemia/ Diabetes
  - Euphoria/ psychosis
  - Peptic ulcer disease
  - Osteoporosis

Steroid induced ocular hypertension

- 4% are high responders (IOP rise of >15mmHg)
- 1/3 are moderate responders (IOP rise of 6-15mmHg). Mostly transient and recovers 1-4 weeks after cessation of steroid
- 2/3 are non-responders (IOP rise of <6mmHg)
- High responders are more likely to develop glaucoma over time
- High risk groups include known POAG, FHx POAG, high myopes, DM, connective tissue disorders (eg RA)
- Thought to be due to reduced outflow through trabecular meshwork
- Different agents have variable propensities to cause IOP rise

Principles of treatment

- ***Use enough, often enough, soon enough, long enough***
- Level of aggression in Rx depends on the diagnosis and clinical manifestations
- Start with high dose and taper according to response
- Early treatment usually results in better control
- Dose of steroid is planned according to the response
- Suppress inflammation until the pathogenic effect ends

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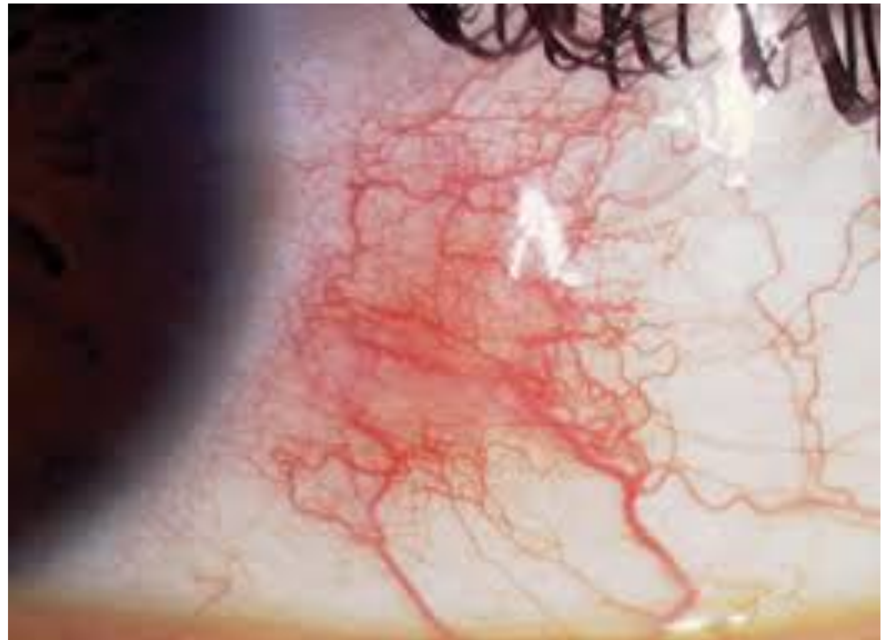
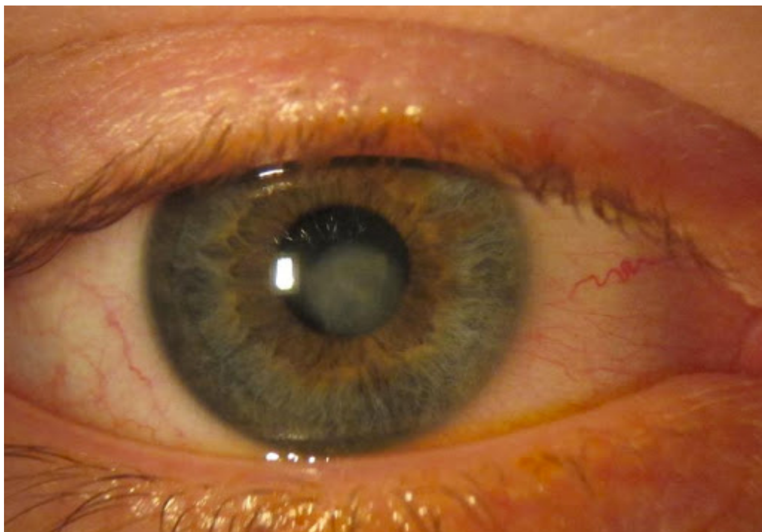
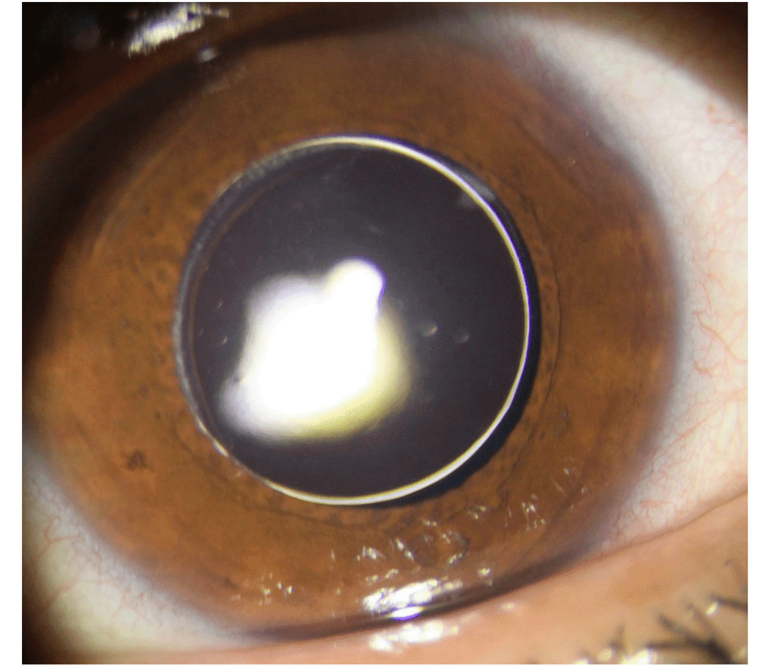



Treatment regimen for ocular surface inflammatory disease

- FML
  - potent steroid, poor penetration of anterior chamber
  - very useful in ocular surface inflammation
  - less risk of IOP problems
- Start at 4x daily for 1-2 weeks depending on the response
- May need to be used in conjunction with other agents eg mast cell stabiliser or anti-histamine



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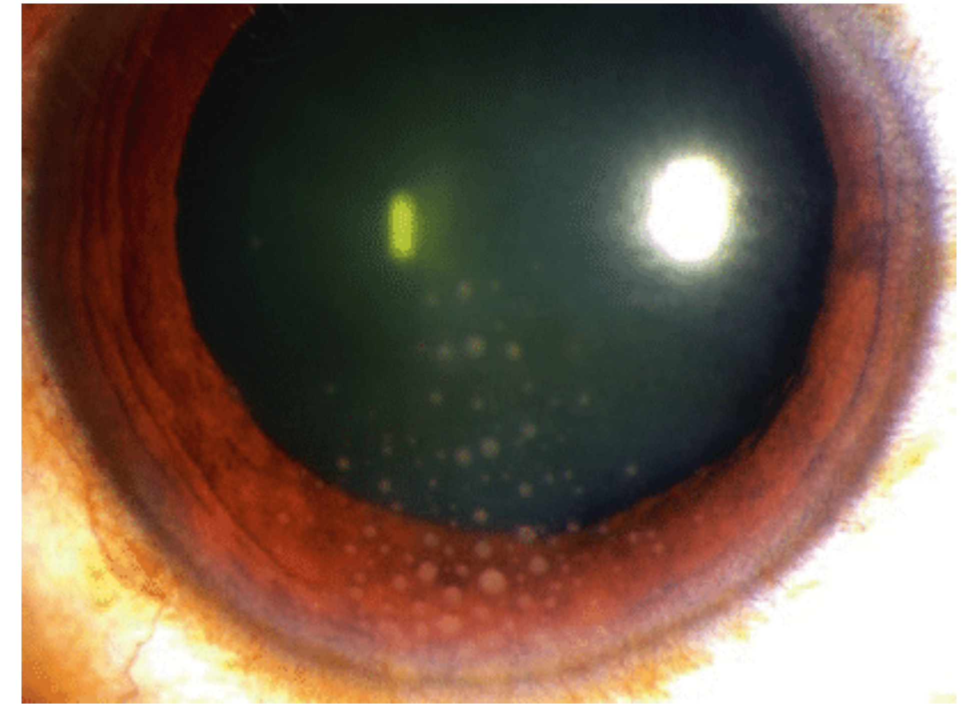

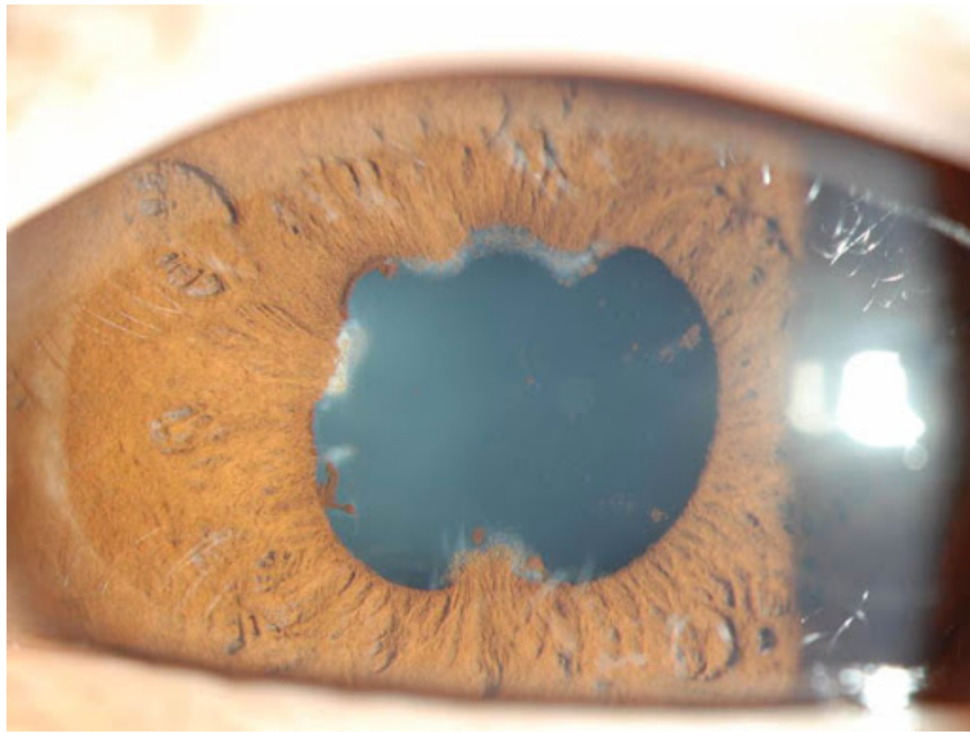

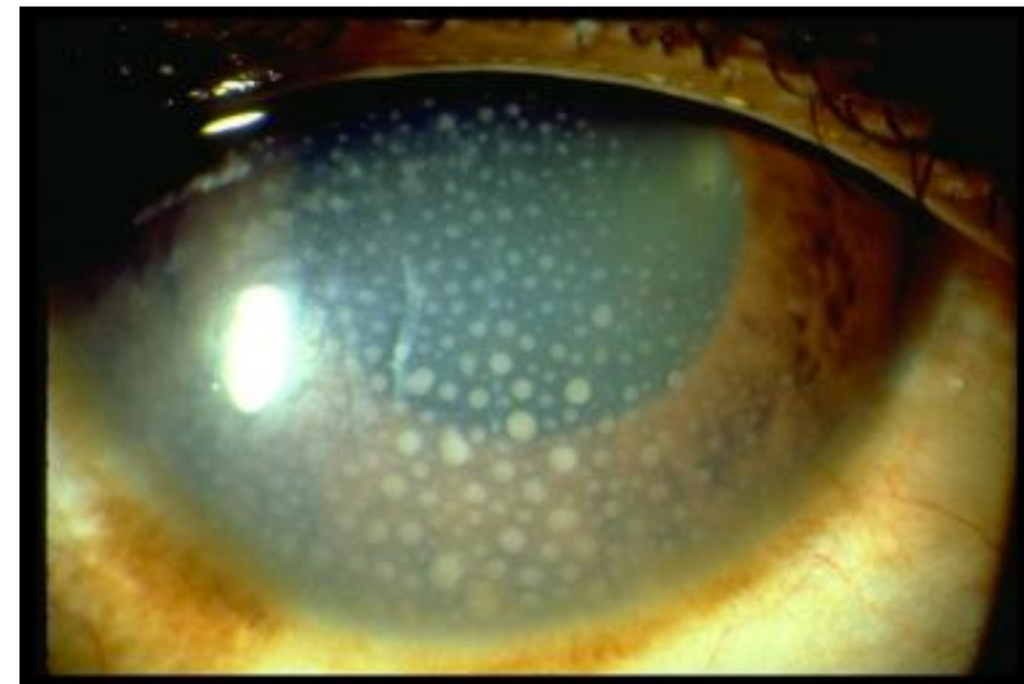

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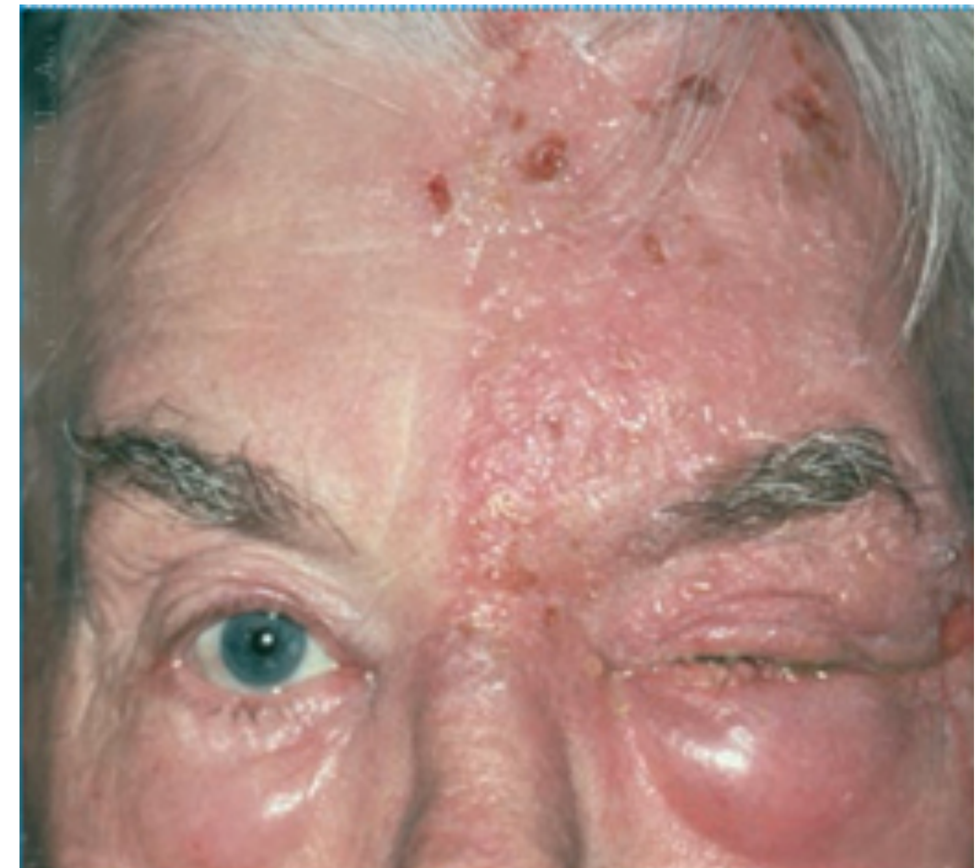


Treatment regimen for anterior uveitis

- Mild inflammation: 4x daily with taper 4,3,2,1
- Moderate inflammation: 1-2 hourly for 2 days then 4-6 x daily for 5 days then taper 4,3,2,1
- Severe inflammation: loading dose can be given every 5 min for 2 hours then hourly for 1-2 days with slower taper according to response

Topical cyloplegics

- Aim- symptomatic relief by alleviating ciliary muscle spasm, prevention of or breakage of posterior synechae by mobilising iris. Beware of permanent dilated state
    - Atropine 1% OD
    - Homatropine 1% BD
    - Cyclopentolate 0.5%, 1.0% TDS
    - Tropicamide 1%

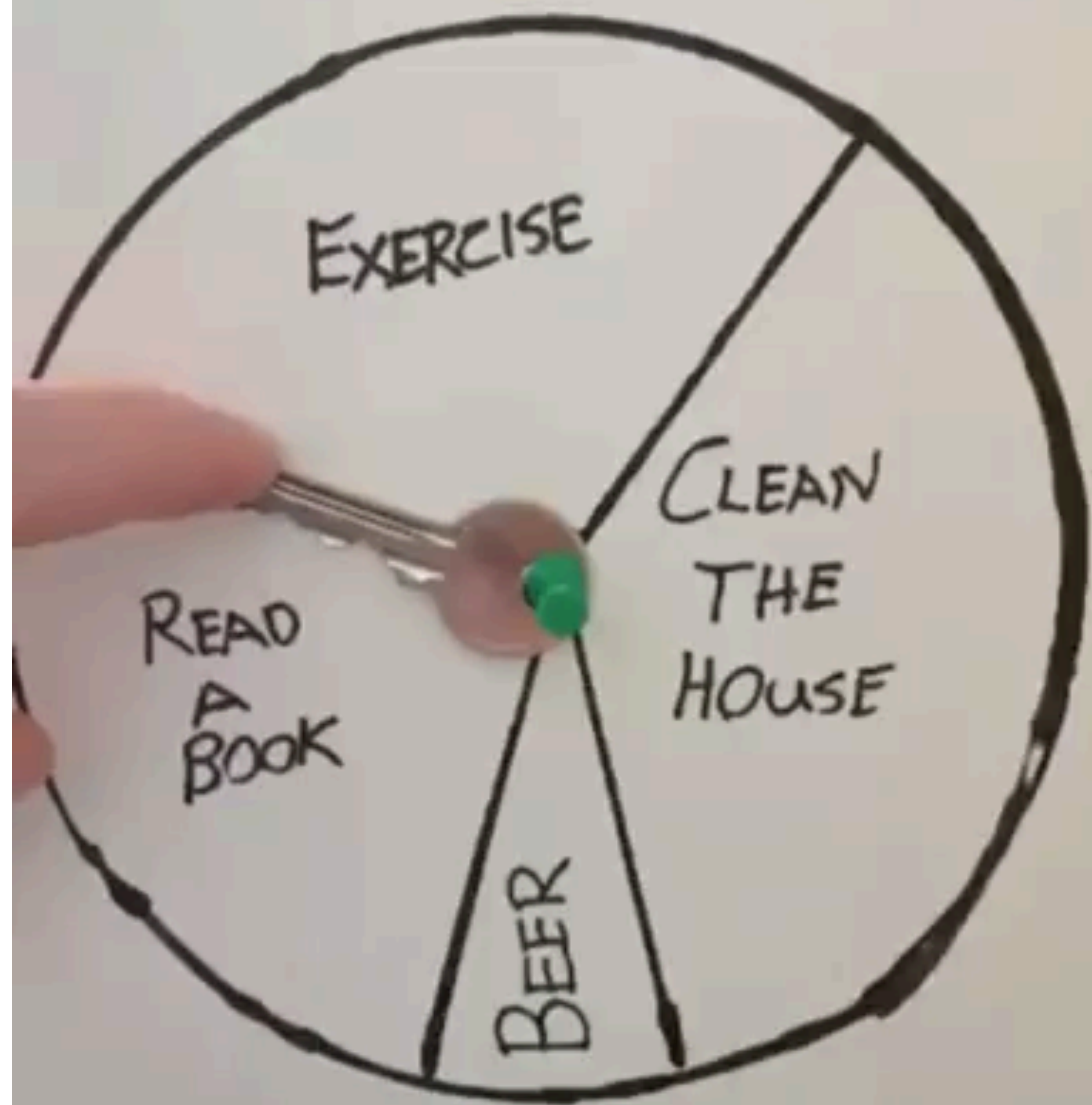
Monitoring response to treatment

- Schedule follow-up depending on severity of inflammation and disease entity
- Monitor VA, IOP, grading of cellular activity and flare
- Monitor for side effects of treatment
  - steroid response glaucoma
  - cataract formation

There is a massive upside to all this self isolation, with less travel, less pollution and less human activity the Earth is healing and recovering…

There is a massive upside to all this self isolation, with travel, less pollution and less human activity the Earth is healing and recovering… this was London today.

Where to from here…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Thank you!

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