Lupus and the Eye

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FACT:
80%

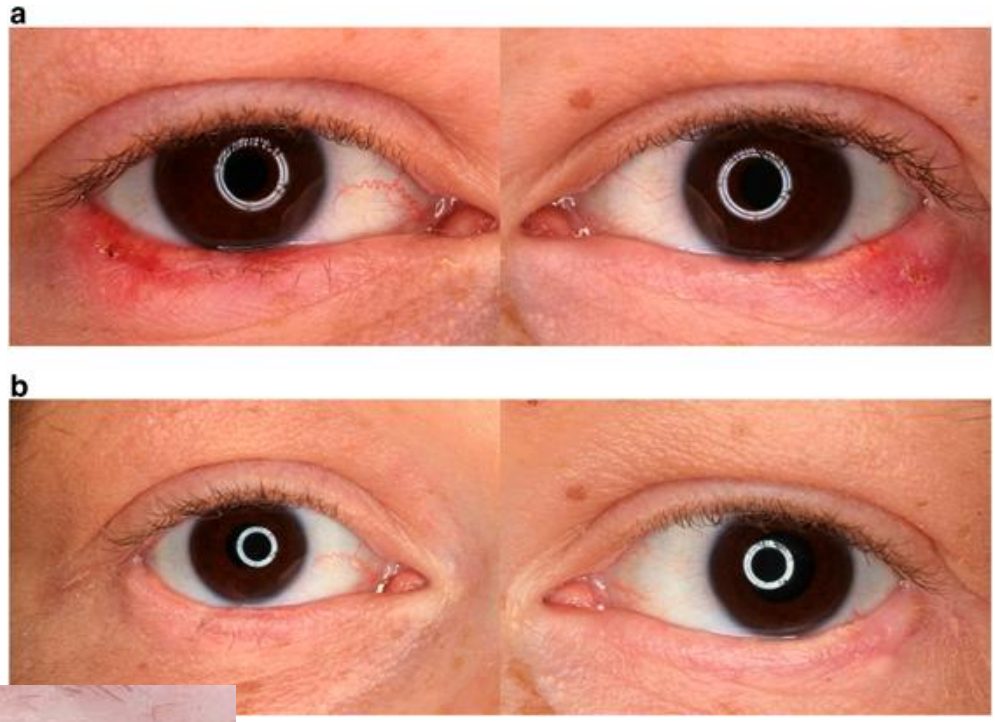

Help Us Solve
The Cruel Mystery
LUPUS
FOUNDATION OF AMERICA
GEORGIA CHAPTER

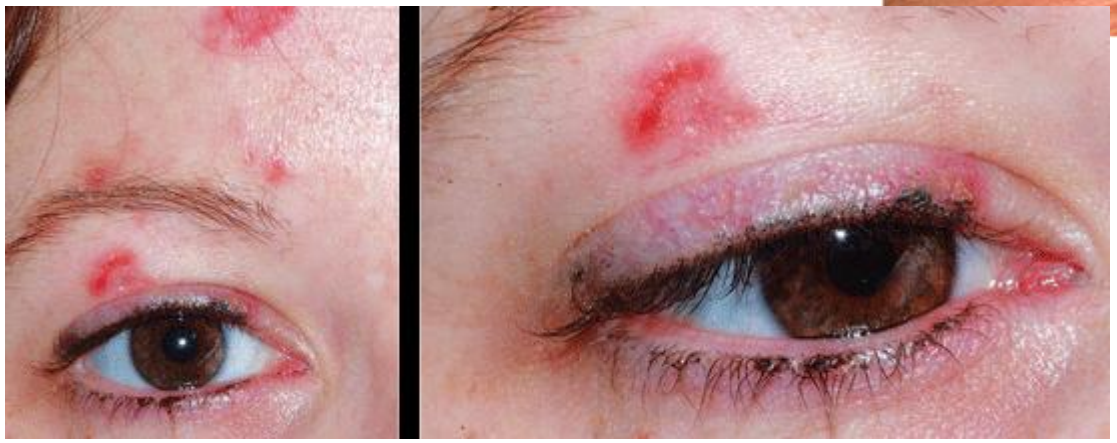

References
LUPUS
LUPUS

Objectives

- Recognize rheumatic diseases associated with inflammatory eye disease
- Understand treatment options for inflammatory eye disease

Discoid Lupus Erythematosus of the Eyelid





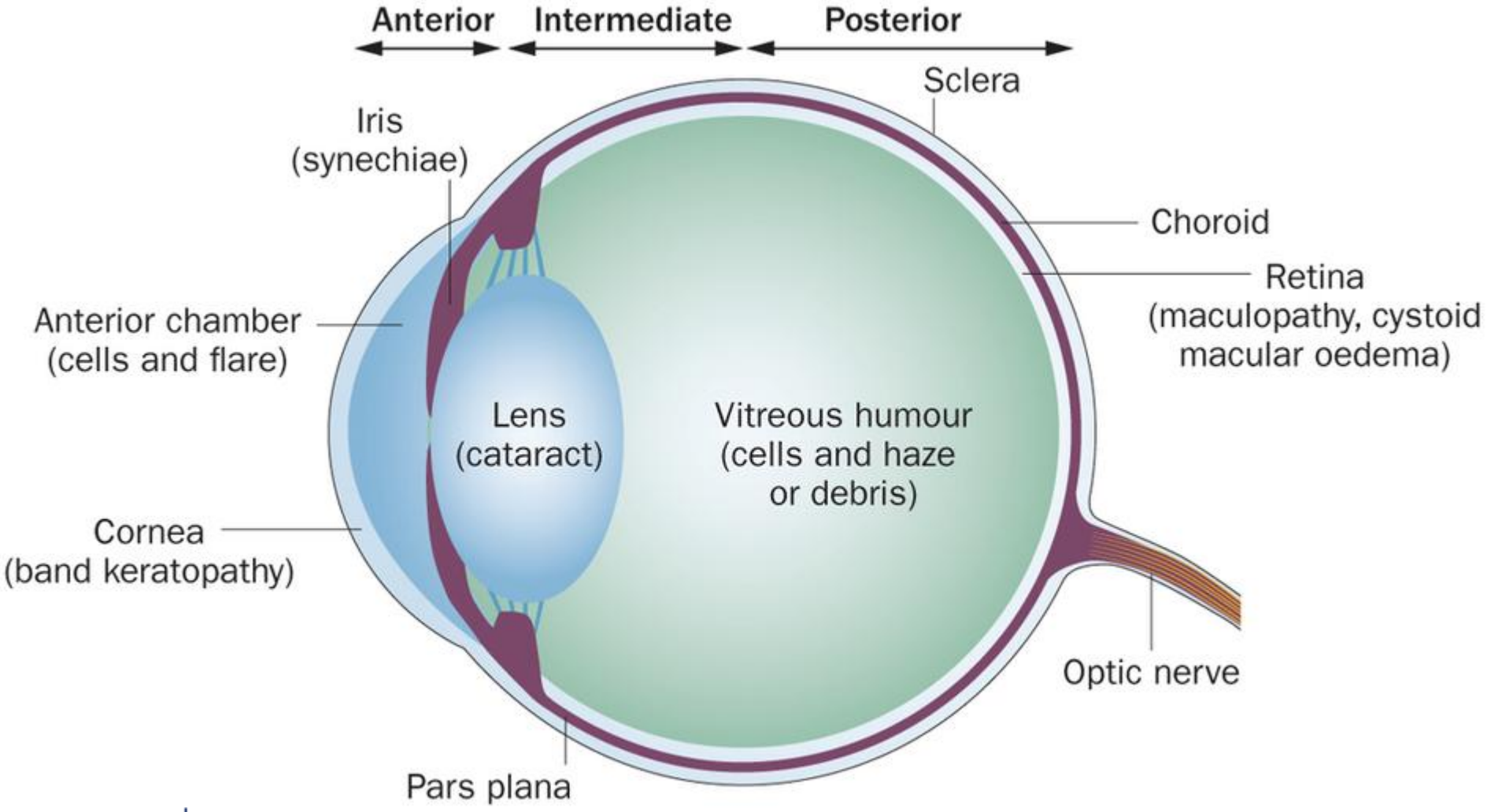
The Journal of Dermatology Volume 33, Issue 5, pages 368-371, 12 MAY 2006
Gunasekera V et al. Eye 2008;22:1205-1206.
www.reviewofophthalmology.com

Immune Mediated Inflammatory Eye Conditions

- Episcleritis
- Scleritis
- Uveitis
- Peripheral ulcerative keratitis

https://www.youtube.com/watch?v=RE1MvRmWg7I

Anatomy of the Eye



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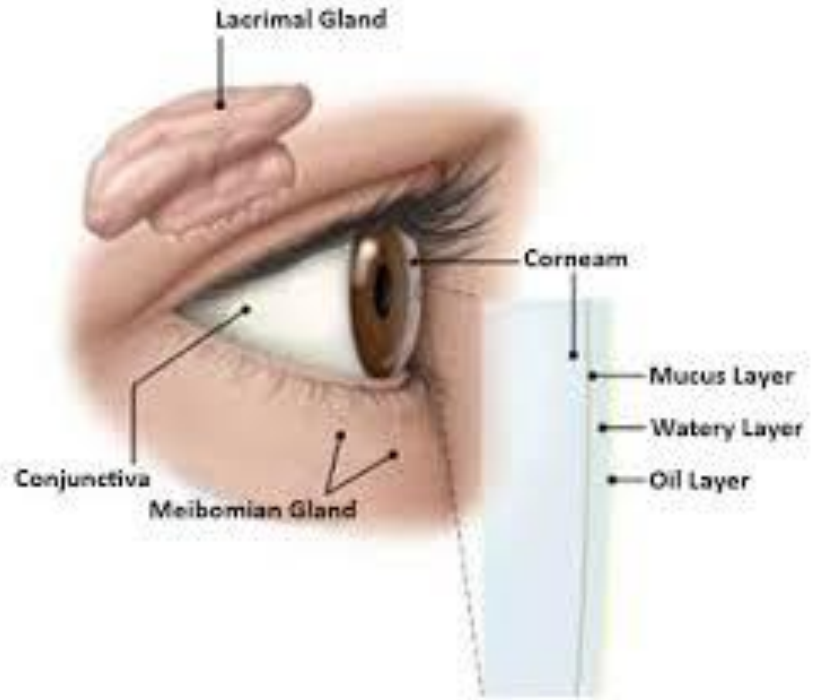
Nature Reviews | Rheumatology

Sun ES Nat Rev Rheumatol. 2015 Mar 31. doi: 10.1038/nrrheum.2015.20

Dry Eye Syndrome

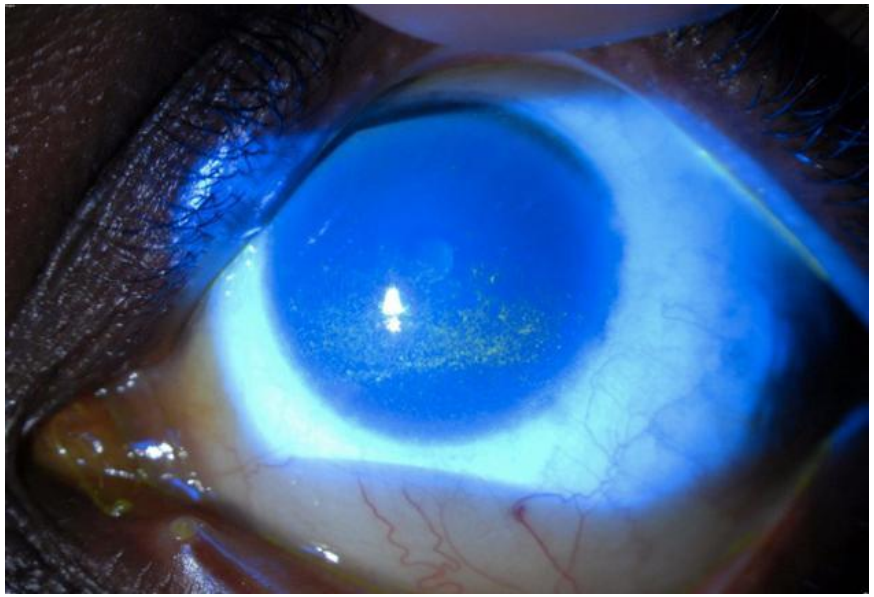
- Most common ocular feature of lupus
- Often associated with secondary Sjögren
- Irritation
- Redness
- Reduced tear film
- Corneal changes

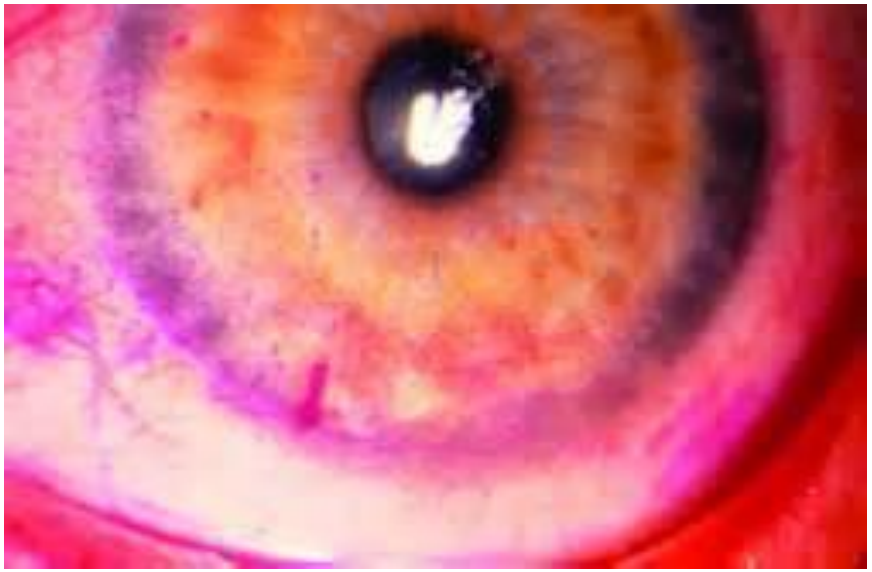


www.theralife.com

Sjögren's and Secondary Sjögren's

- Sicca symptoms
- Keratoconjunctivitis sicca





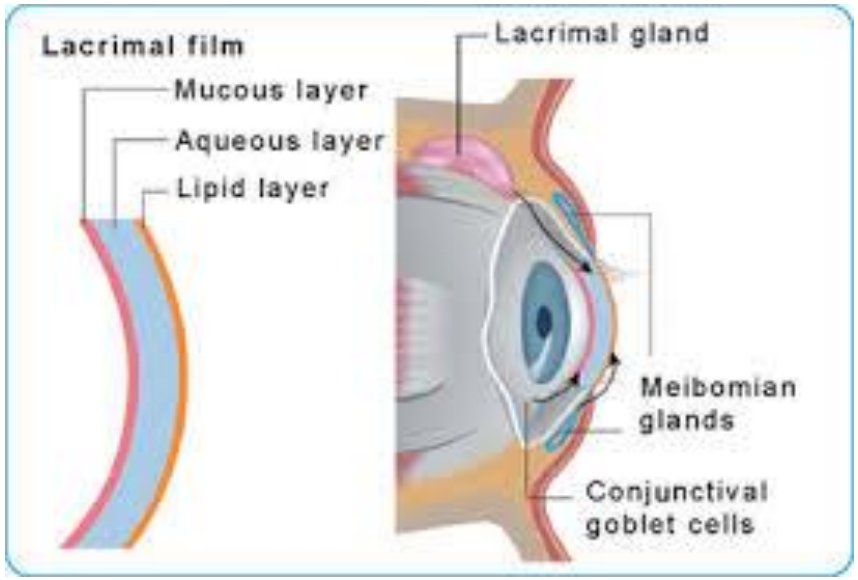
Treatment

- Natural tears
- Cyclosporine A
- Pilocarpine
- Cevimeline

- Punctal occlusion

Meibomian Gland Dysfunction

- Most common cause of dry eyes
- Sebaceous gland at the rim of the eyelids
- Secretes oily substance that prevents eye's tear film
- Blepharitis



http://www.reviewofophthalmology.com/content/c/36944/

www.dry-eyes.com.au

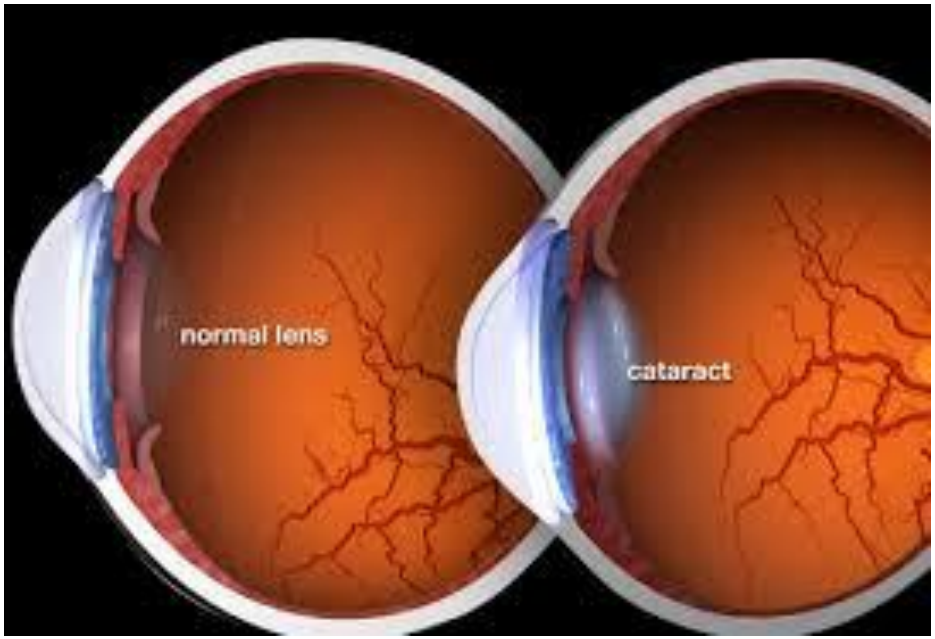
Treatment of Posterior Blepharitis

- Warm compresses
- Lid scrubs
- Flax seed oil

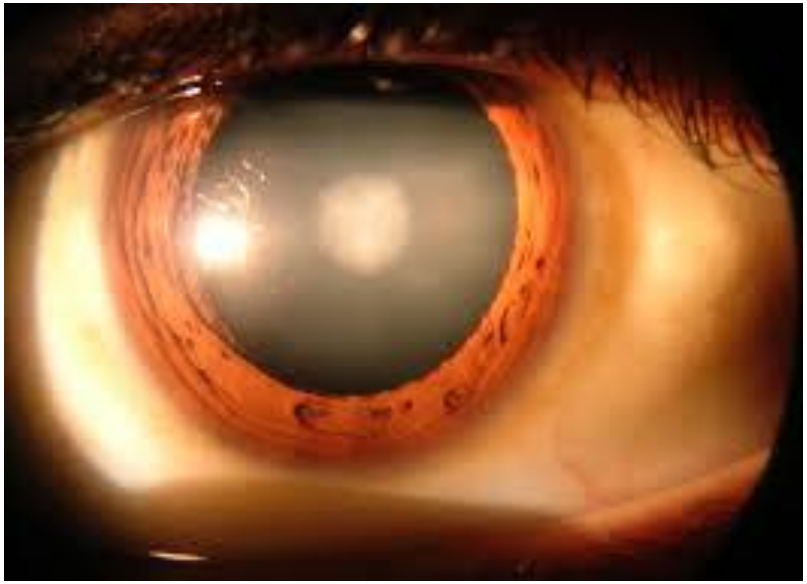
http://www.reviewofophthalmology.com/content/c/36944/

Cataracts

- Opacity of the lens of the eye
- Potential side effect of steroid use



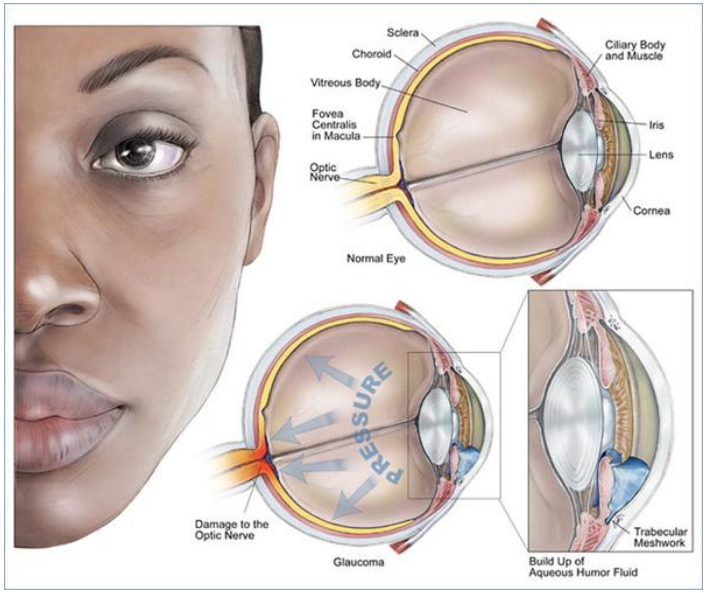
Webmed.com



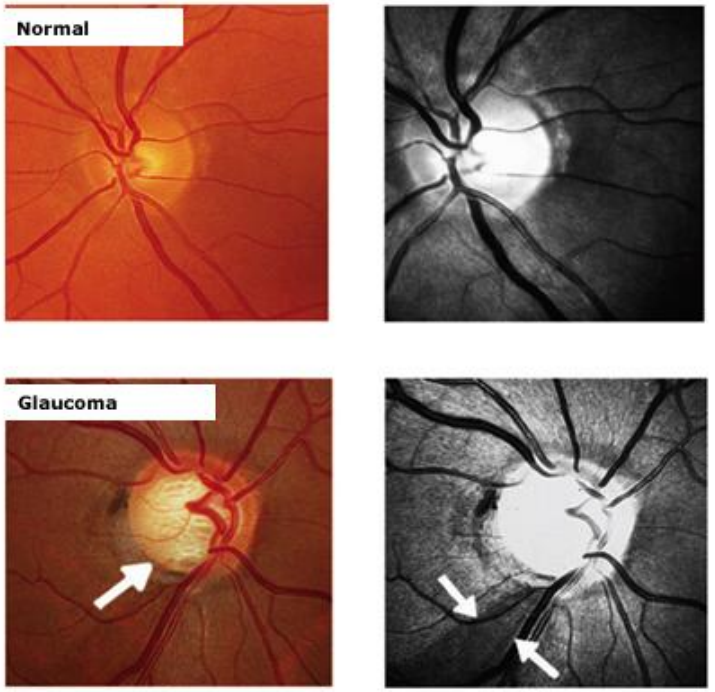
Wikipedia.org

Glaucoma

- High intra-ocular pressure
- A potential side effect of steroids
- Open angle
  - Generally painless



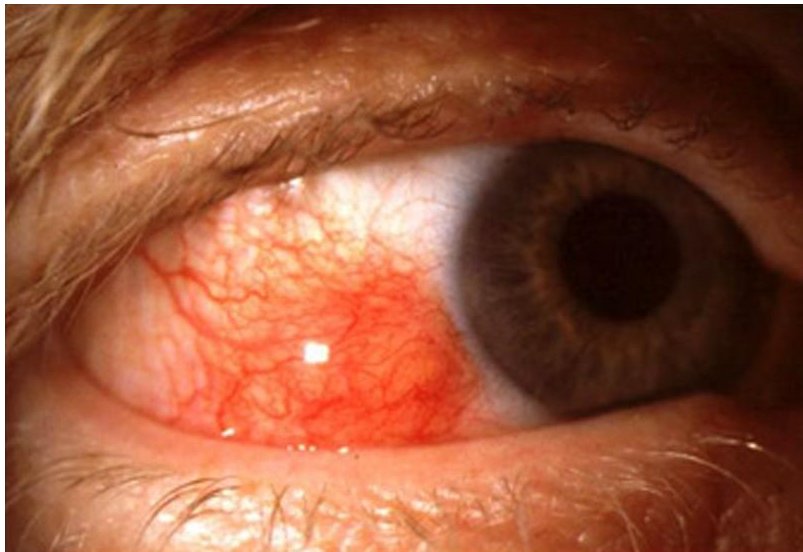
www.rockport-optical.com



Uptodate.com

Episcleritis

- Mostly not associated with systemic disease
- Typically self limited
- Red eye, not painful
- Seronegative spondylarthritis
- ANCA associated vasculitis
- Topical NSAIDs, steroids
- Oral NSAIDs



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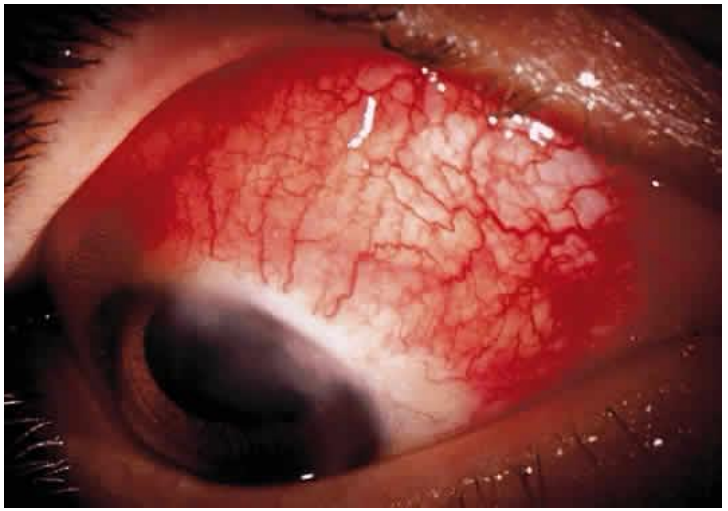
Scleritis

- Half associated with underlying systemic illness
- 90% cases involve the anterior portion
- Severe constant boring pain

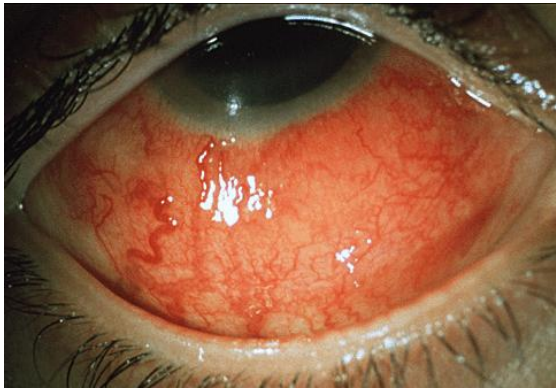
- RA
- Granulomatosis with polyangiitis
- IBD
- SLE

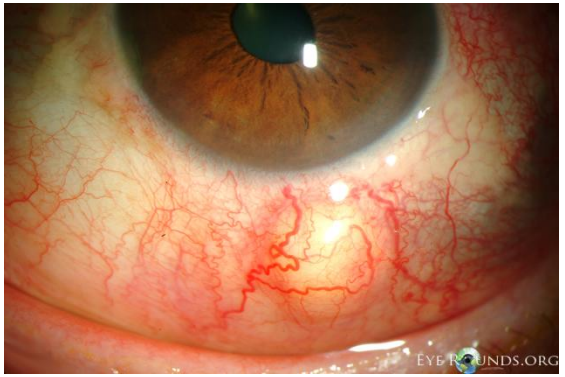
- HSV, HIV, Lyme

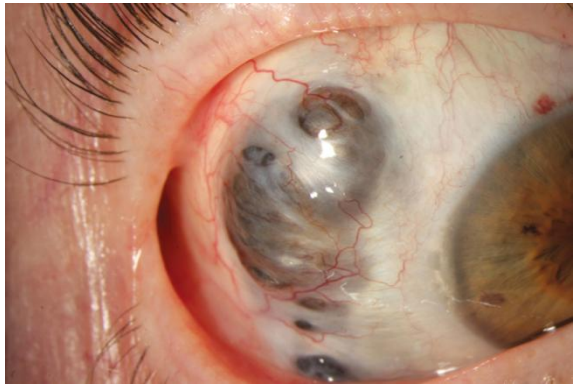


Anterior Scleritis

- Diffuse anterior
  - Most common, least severe
  - 50% of cases
- Nodular anterior
  - 20-40% cases
  - Recurrent in 50%
- Necrotizing anterior
  - Women, older age







eyepathologist.com
webeye.ophth.uiowa.edu
Nature Reviews Rheumatology 10, 108–116 (2014) doi:10.1038/nrrheum.2013.185

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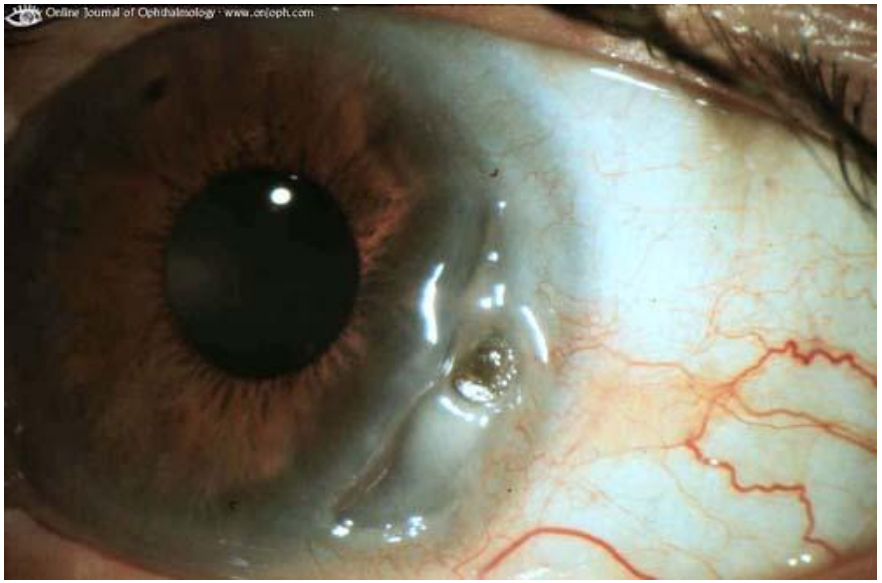
Peripheral Ulcerative Keratitis

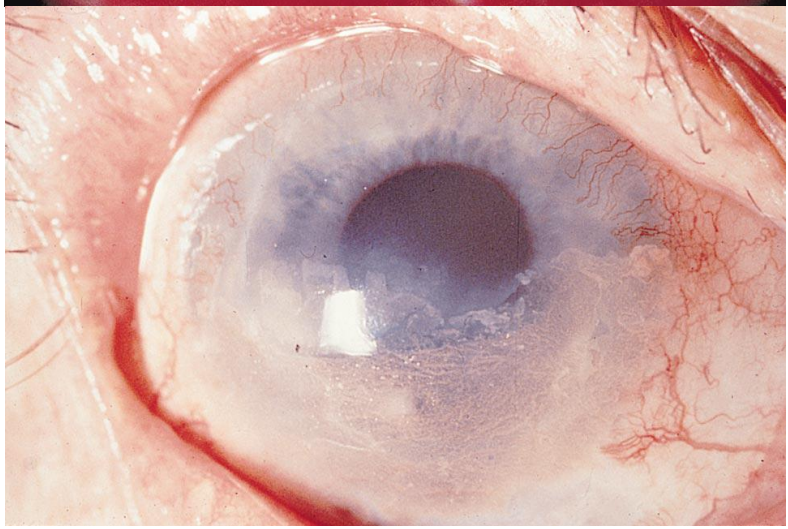
- Most common form of corneal melt in RA
- Non-specific symptoms
- Other associations:
  - GPA, PAN
  - SLE, Sjögren, Crohn's
  - Acne rosacea, cicatricial pemphigoid, Stevens-Johnson syndrome



Valentin H et al. Medicine 2014;93:1760

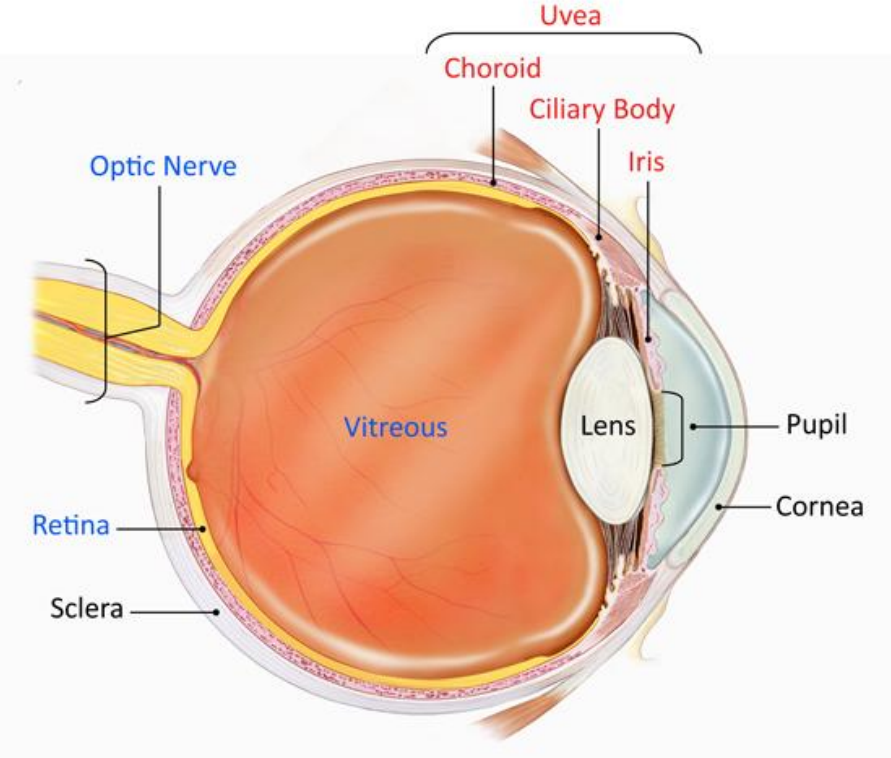
PUK

- Crescent shaped area of inflammation at the margin of the corneal stroma
- Can be resistant to treatment
  - Cyanoacrylate glue
  - Conjunctival flap
  - Systemic treatment



Messmer EM and Foster S. Survey of Ophthalmology 199;53:379-396

Uveitis



- Inflammation of the uvea
- Iritis=uveitis
- Iridocyclitis-uveitis with ciliary body involvement
- Pain, redness
- Anterior chamber leukocytes by slit lamp exam
- 10% blindness

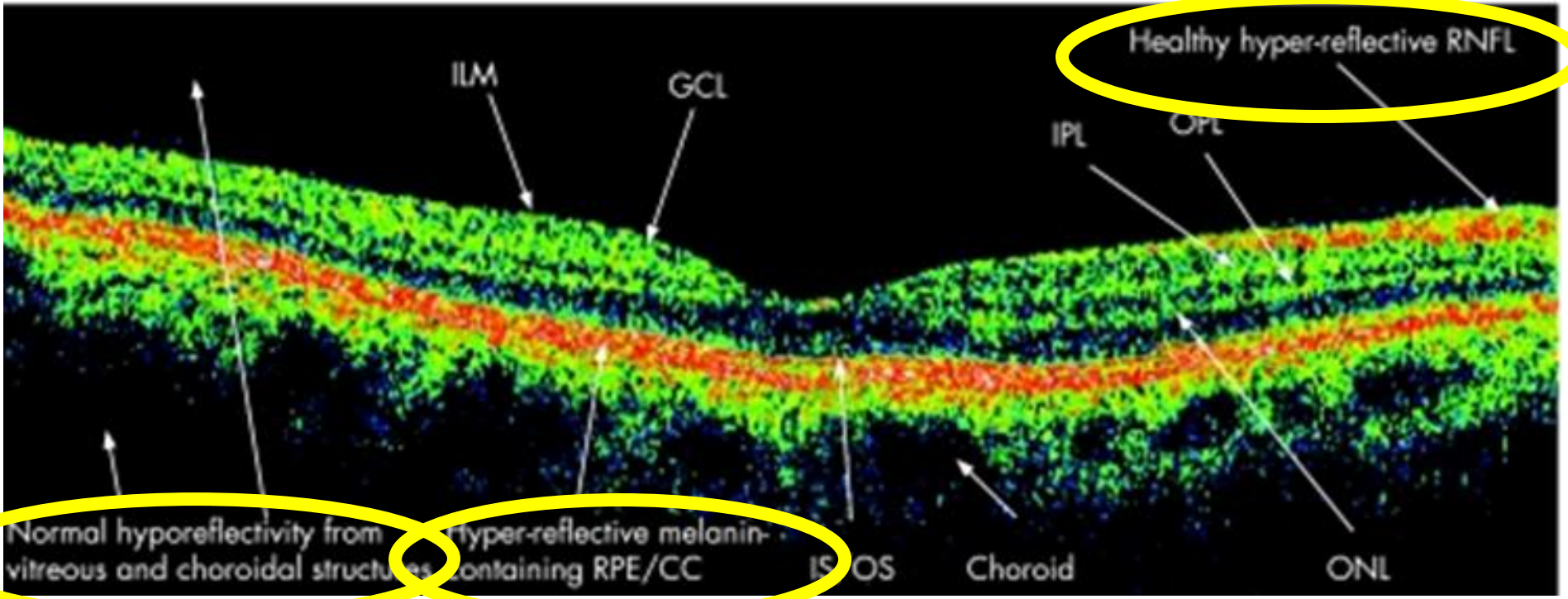
https://www.nei.nih.gov/health/uveitis/uveitis

Techniques Used

- Slit lamp exam
- Fluorescein angiography (FA)
  - Macular edema
  - Choroidal neovascularization
  - Retinal detachment
- Optical coherence tomography (OCT)
- Ultrasound

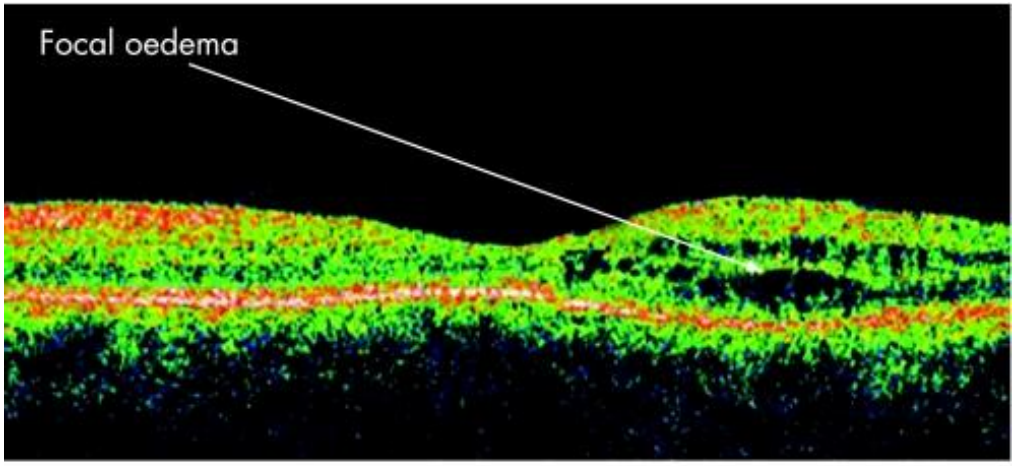
Int Ophthalmol Clin. 2012;52(4):33-43.

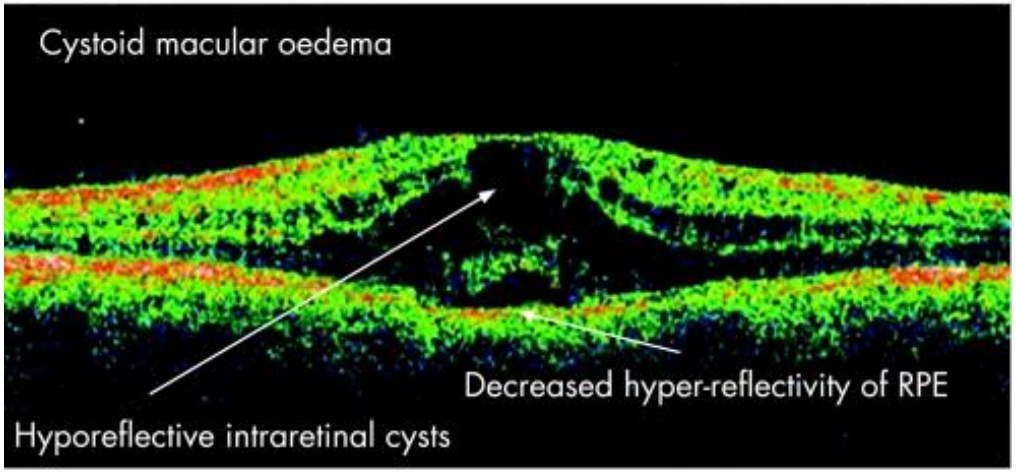
Normal OCT

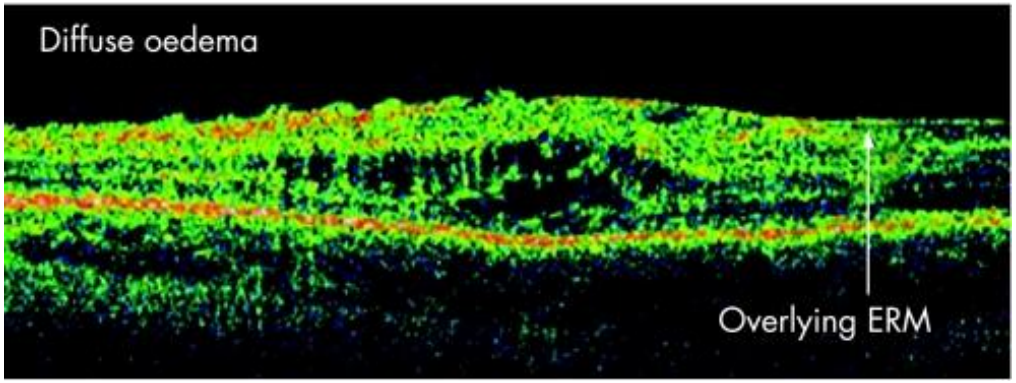


Br J Ophthalmol. 2007; 91(12): 1680–1685. Published online 2007 Jun 25. doi: 10.1136/bjo.2007.124099

OCT







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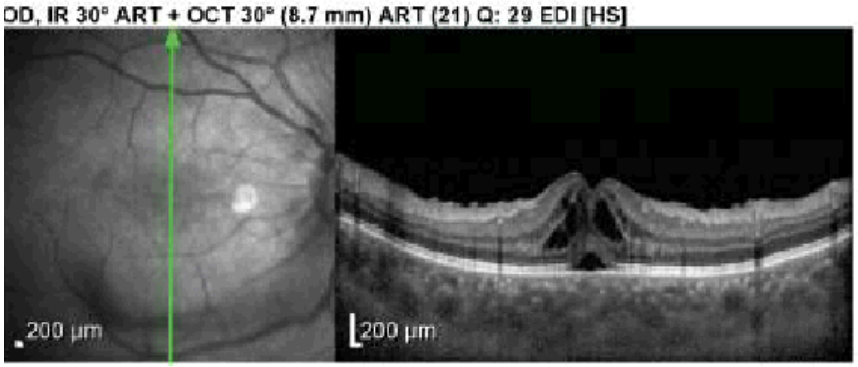
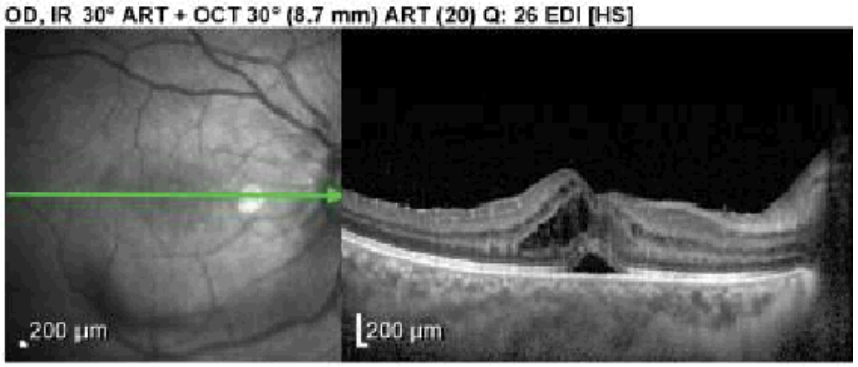
Br J Ophthalmol. 2007; 91(12): 1680–1685. Published online 2007 Jun 25. doi: 10.1136/bjo.2007.124099

OCT Results


OD, IR 30° ART + OCT 30° (8.7 mm) ART (21) Q: 29 EDI [HS]
200 µm
200 µm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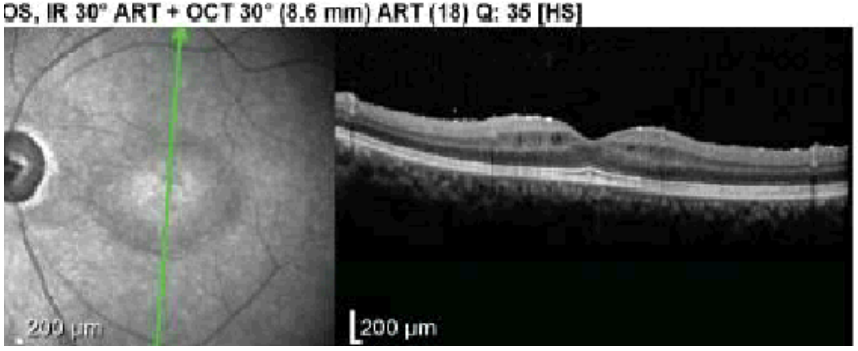
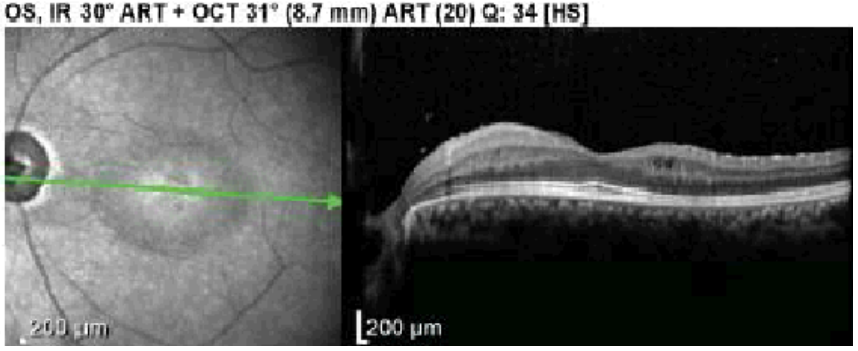

OS, IR 30° ART + OCT 30° (8.6 mm) ART (18) Q: 35 [HS]
200 µm
200 µm


OS, IR 30° ART + OCT 31° (8.7 mm) ART (20) Q: 34 [HS]
200 µm
200 µm

Treatment of Inflammatory Eye Disease

- Eminence based, not evidence based
- Trial and error
- Few open label trials and meta-analysis
- Treatment, in large part, borrowed from treatment of rheumatoid arthritis

Treatments

- Topical NSAIDs
- Cycloplegics
- Topical steroids
- Steroids
  - IV
  - PO
  - Sub-tenon
- Steroid-sparing medications
- Surgical options

Complications of Uveitis

- Glaucoma
- Cataracts
- Macular edema
- Detached retina

Retinal Retinopathy

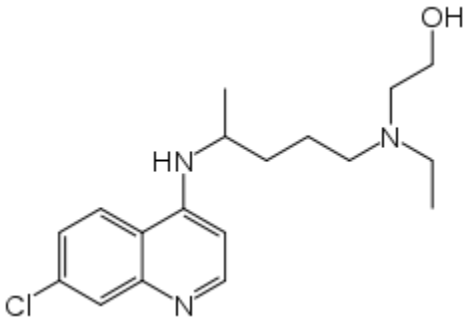
- Cotton-wool spots
- Perivascular hard exudates
- Retinal hemorrhages

Sivaraj RR et al. Rheumatology 2007;46:1757-1762.

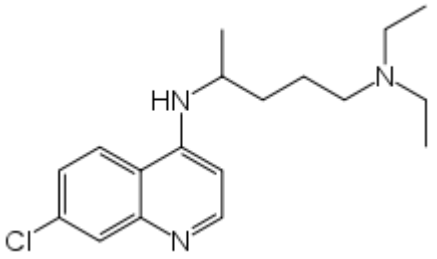
Chloroquine

- Anti-malarial
- Used to treat SLE, cutaneous lupus, RA
- Nausea, headache
- Retinal toxicity

- 6.5mg/kg



hydroxychloroquine



chloroquine

Hydroxychloroquinne

- Skin
- Joints

- Decreases flare rate
- Role in preventing renal and CNS lupus
- Safe in pregnancy
- Reduces cardiovascular risk factors
  - DM
  - Hyperlipidemia

- May reduce blood clots in anti-phospholipid syndrome
- Improves survival rate

Petri M. Curr Rheumatol Rep. 2011 Feb;13(1):77-80.

Mechanism of Action

- Inhibit antigen processing and presentation
  - Alkalinization of endosomes and lysosomes
- Blocks toll-like receptors (TLR 3, 7, 9) that recognizes DNA containing immune complexes
- Produces interferon and causes maturity of antigen presenting cells that activate T cells

HCQ-Adverse Events

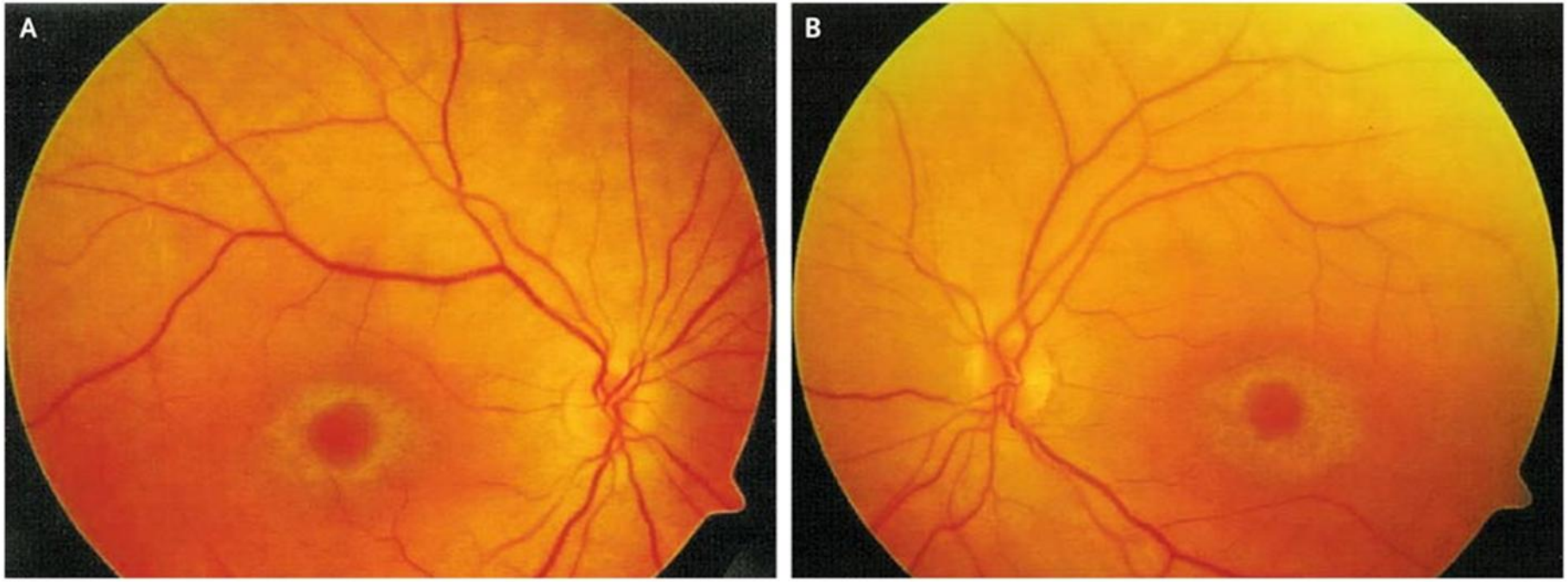
- Serious side effects are very rare
- Nausea
- Headache
- Skin rashes

The Eye and HCQ

- Corneal deposits
  - Does no affect vision
  - Can create transient halos or heightened light sensitivity
  - Reversible
- Retinopathy

Mechanism of Toxicity

- Anti-malarials bind to melanin in the retinal pigment epithelium, causing cytotoxic effects, first around the fovea.



Hugo Mesquita Nogueira, M.D., and Rita Dinis Gama, M.D.
N Engl J Med 2009; 360:2224.

Retinopathy

- Risk is low in the first 5 to 7 years of exposure
- Toxicity exceeds 1% after that time
- Real body weight predicted risk better than ideal body weight
- Prevalence less than 2% within first 10 years of use
- Increases to 20% after 20 years of use

AUWolfe F, Marmor MF. Arthritis Care Res (Hoboken). 2010;62(6):775

Melles RB, Marmor MF. JAMA Ophthalmol. 2014;132(12):1453.

Risk Factors for Retinal Toxicity

- Exceeding daily dosage of 6.5mg/kg
- Obesity
- Duration of use longer than 5 years
- Kidney or liver impairment
- Age greater than 60 years
- Preexisting retinal disease
- Concomitant use of Tamoxifen

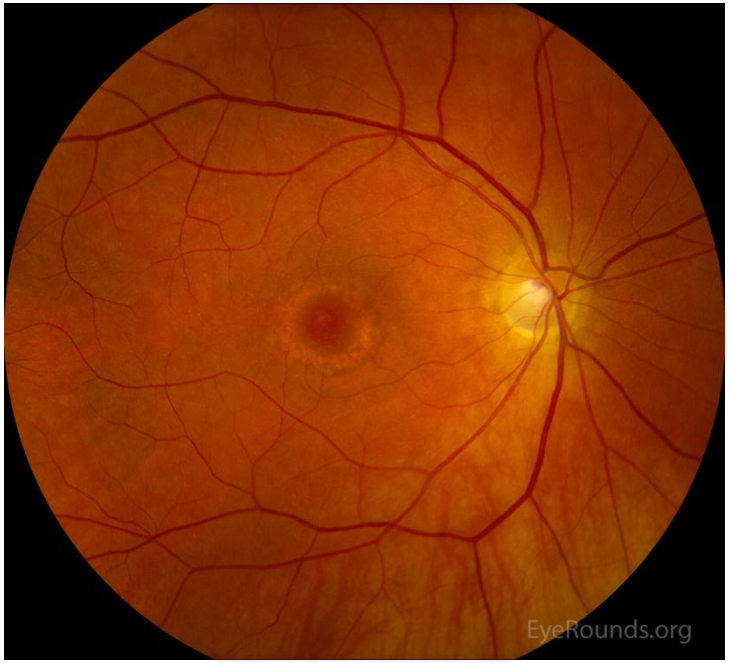
Michaelides M et al. Arch Ophthalmol 2011;129:30-39.

Earliest Retinal Signs of Toxicity

- Macular edema
- Increased pigmentation
- Increased granularity
- Loss of foveal reflex

Symptoms of Toxicity

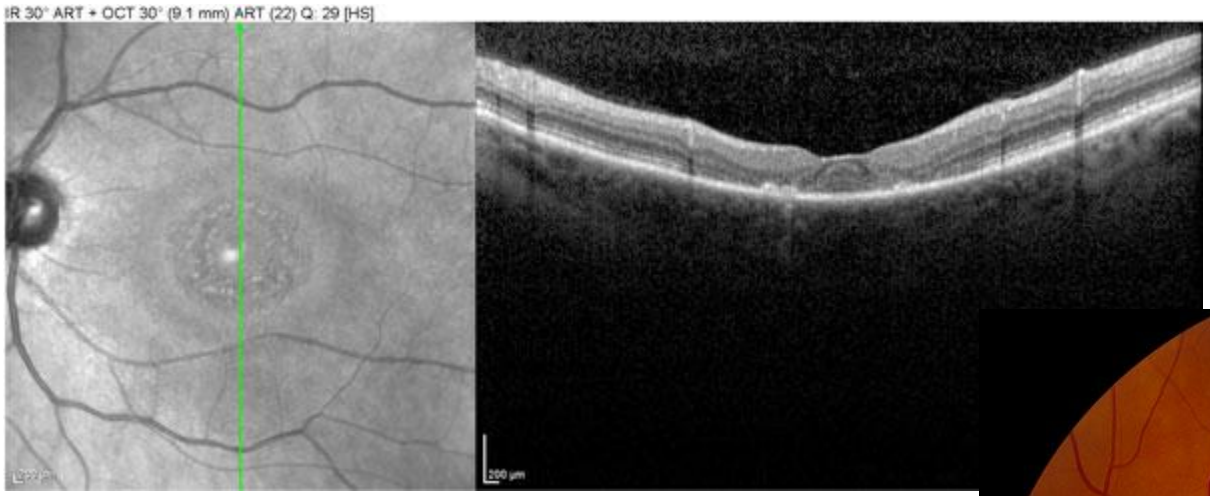
- Central visual loss
  - Reading difficulties
  - Reduced color vision
  - Central scotoma

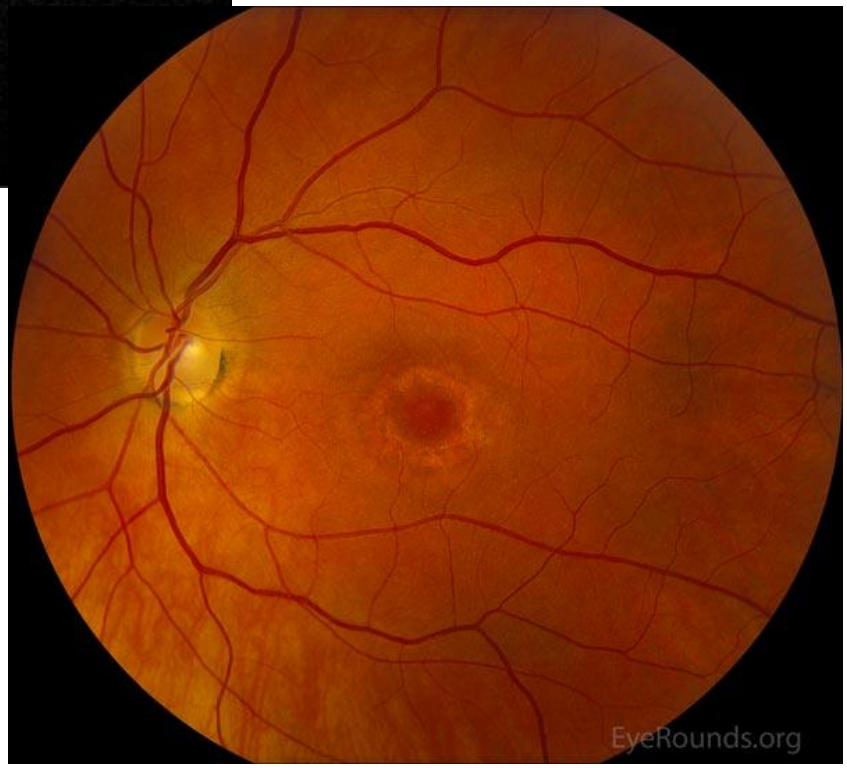


- Maculopathy
  - Disturbance of retinal pigment epithelium
  - Bull's eye

http://webeye.ophth.uiowa.edu/eyeforum/atlas/pages/hydroxychloroquine-toxicity/index.htm

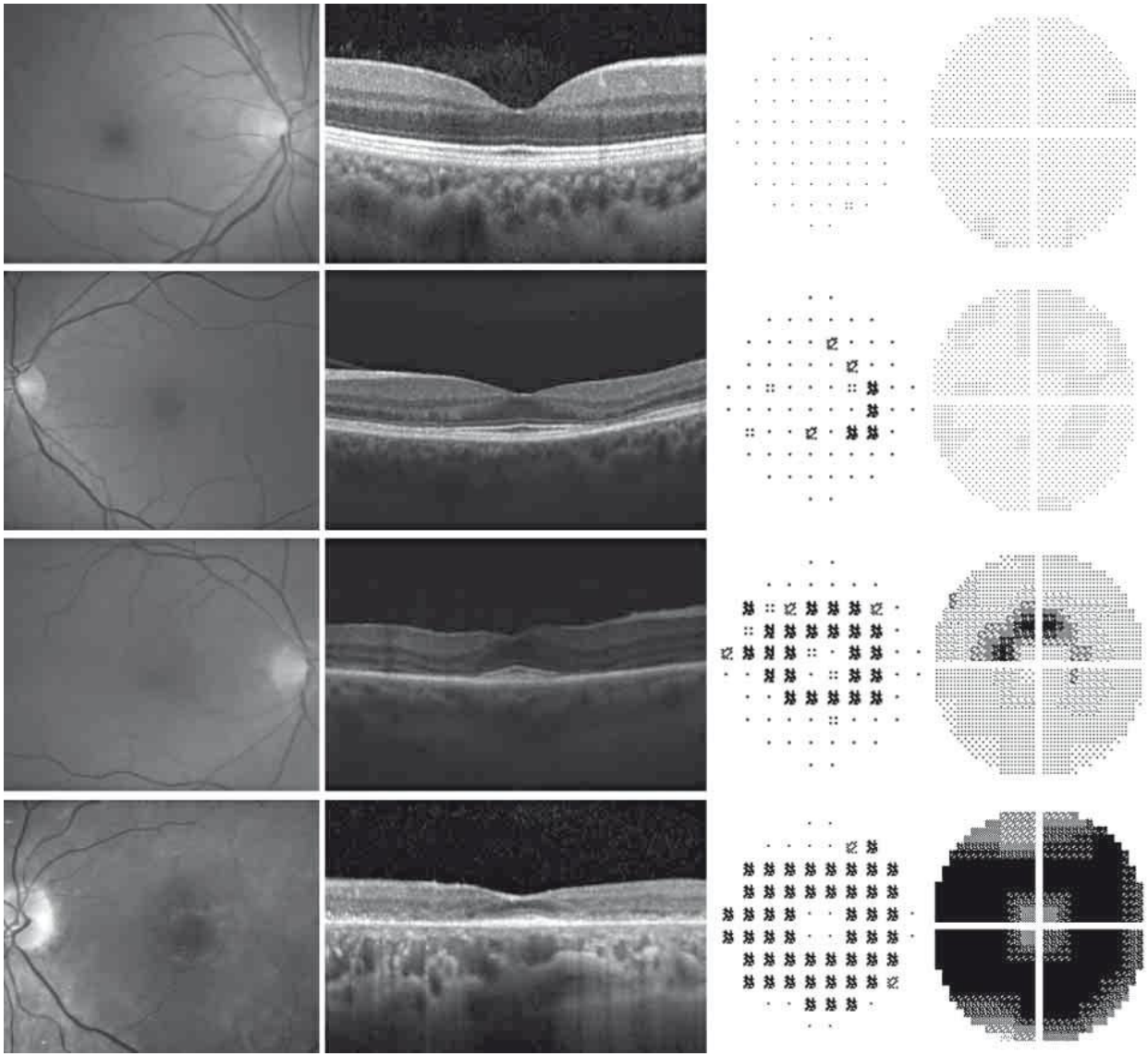
Bull's Eye Maculopathy





http://webeye.ophth.uiowa.edu/eyeforum/atlas/pages/hydroxychloroquine-toxicity/index.htm

Coherence Tomography (OCT)



Screening

- Baseline eye exam within first year of use
  - Dilated retinal exam, visual field testing
- Follow-up exams range from every 6 months to 5 years depending on risks
- Exam every year after 5 years of therapy

AUWolfe F, Marmor MF. Arthritis Care Res (Hoboken). 2010;62(6):775

Melles RB, Marmor MF. JAMA Ophthalmol. 2014;132(12):1453.