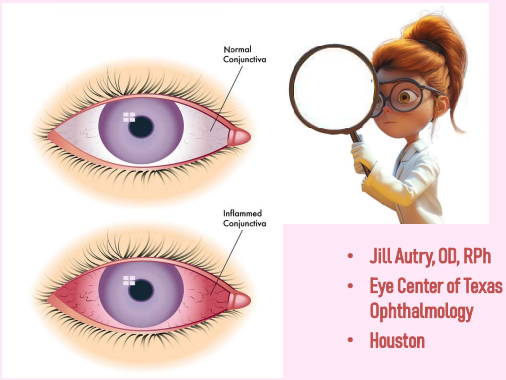
WHAT'S BEHIND THE PINK EYE?

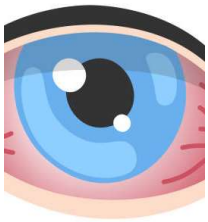


- Jill Autry, OD, RPh
- Eye Center of Texas Ophthalmology
- Houston

1

CONJUNCTIVITIS TYPES

- Viral
- Bacterial
- Allergic
- Toxic
- Nonspecific
  - Mechanical, CL induced, FB induced, conjunctivochalasis, dry eye



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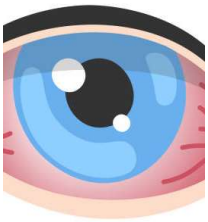
FOLLICLES VS PAPILLAE

- Neither is pathognomonic for specific disease
- HAVE TO CHECK THE EYELIDS
- Follicles
  - Small, dome-shaped, without central vessel
  - More pale at surface, more red at base
  - More inferior palpebral conjunctiva
  - Viral, chlamydial, allergic, non-pathologic in asymptomatic children, herpes simplex, toxic, molluscum, microsporidia, milkweed conjunctivitis
  - More likely to have positive PA node



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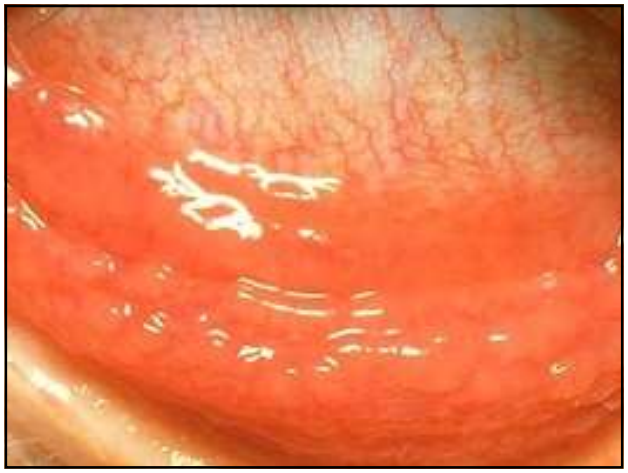

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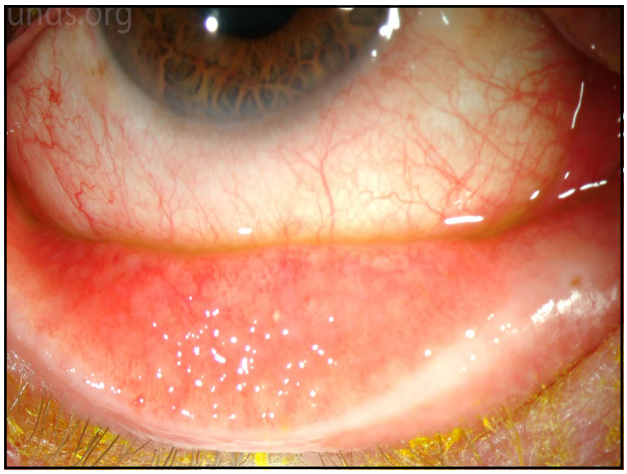

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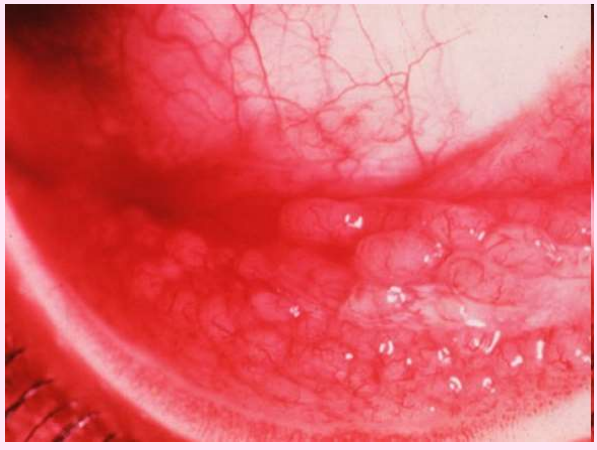
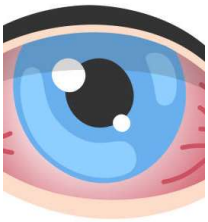


6

FOLLICLES VS PAPILLAE

- Neither is pathognomonic for specific disease
- HAVE TO CHECK THE EYELIDS
- Papillae
  - Flattened nodules with central vessel
  - More red on surface, more pale at base
  - Coat the surface of the superior palpebral conjunctiva
  - More associated with immune or mechanical response
  - VKC (limbal), AKC, GPC (upper lid), floppy eyelid syndrome



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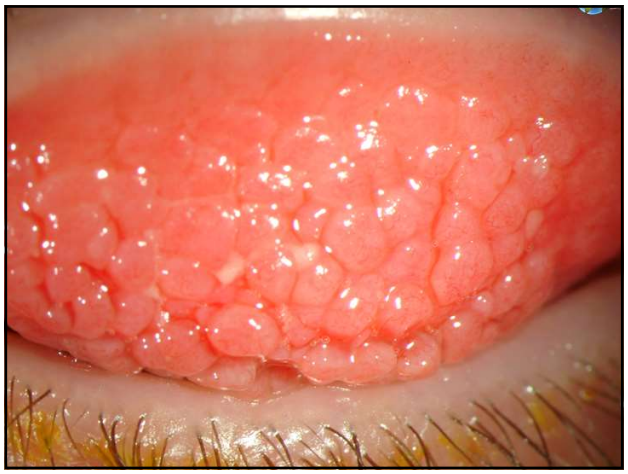

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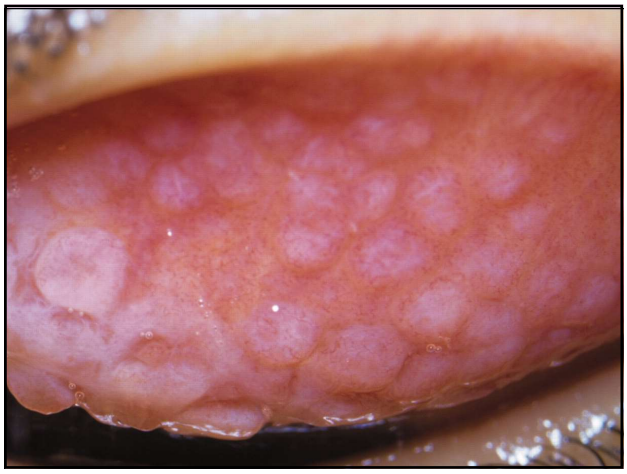

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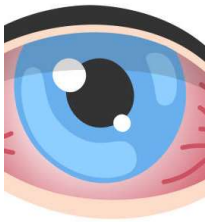
WHAT HAS A POSITIVE PA NODE?

- Adenovirus (EKC)
  - Rare in bacterial conjunctivitis
- Chlamydial conjunctivitis
- Gonococcal conjunctivitis
- Preseptal cellulitis
- Primary herpes simplex



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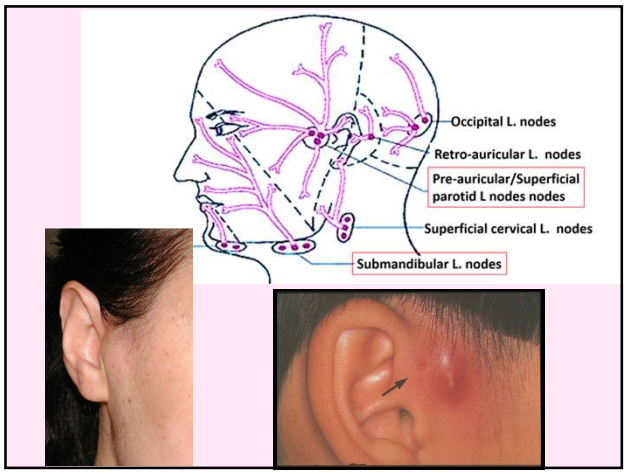
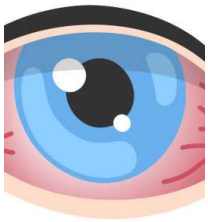


11

CONJUNCTIVITIS TIMELINE

- Hyperacute
  - Gonoccocal
- Acute
  - Viral (EKC, herpes, enterovirus, coxsackievirus, microsporidia)
  - Bacterial
- Chronic
  - Chlamydial conjunctivitis
  - Allergic conjunctivitis, AKC, VKC
  - Toxic conjunctivitis
    - Medication induced
    - Chronic eyelid disease
    - Staph exotoxin induced
  - CL overwear induced (acute vs chronic)
  - Mechanical



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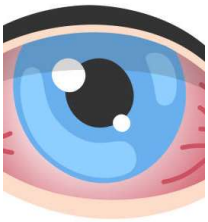
GONOCOCCAL CONJUNCTIVITIS

- Unilateral or bilateral
- Hyperacute infection associated with copious purulence
- Positive PA node
- Severe lid edema more common than with other types of bacterial conjunctivitis
- Most common in newborns (within 3-5 days of birth) and sexually active adult patients (fluid/ocular contact)
- Treat adults with one gram of Rocephin (ceftriaxone) intramuscularly (IM) PLUS
  - Doxycycline 100mg bid x 2 weeks
  - OR 1 gram azithromycin
- Not treated topically unless cornea becomes involved
  - Use fourth generation fluoroquinolone



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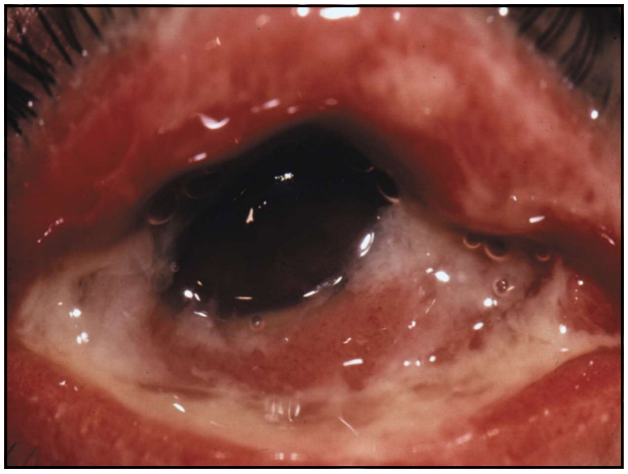

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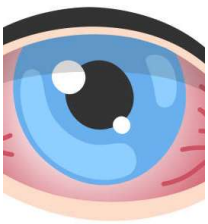
VIRAL CONJUNCTIVITIS

- Adenovirus is most common cause
- Virus initiates inflammatory response
- More inflammation with viral than bacterial
- May have history of recent upper respiratory infection
- May have history of exposure to friends/family with “pink eye”
- If greater than 7 years old, think viral/allergic
  - NOT BACTERIAL



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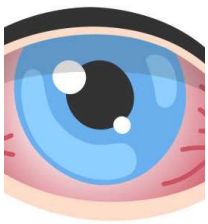
VIRAL CONJUNCTIVITIS

- Starts in one eye and moves to the other
- Second eye is less severely affected
- Hyperemia, watery discharge with mild amount of purulence, MATTING, follicles, positive PA node 50% of time, meaty lower palpebral conjunctiva, petechial bulbar hemes
- Pseudomembranes and/or Subepithelial infiltrates
- May have diffuse lid edema mimicking preseptal cellutitis or other orbital condition



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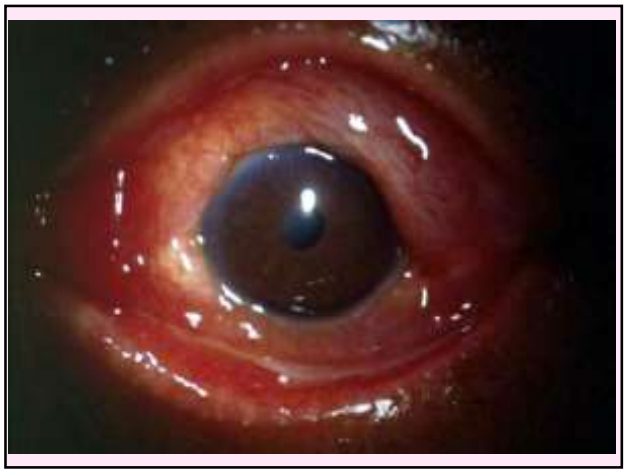

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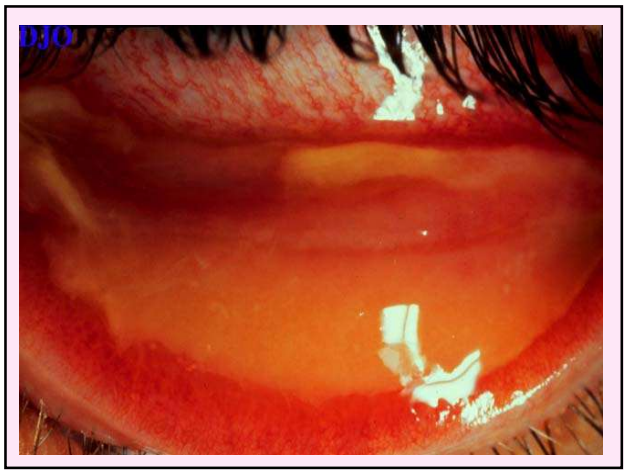

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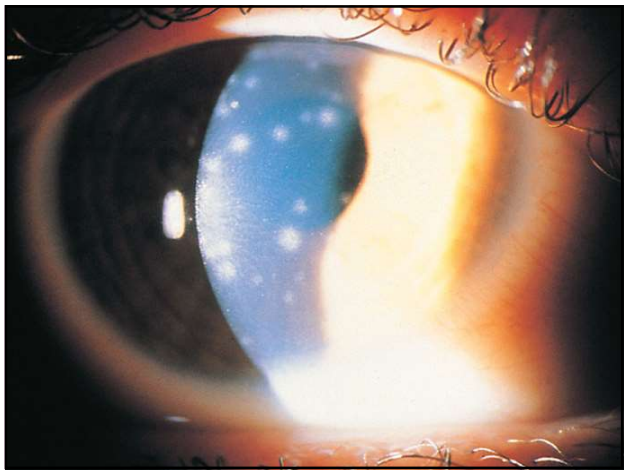

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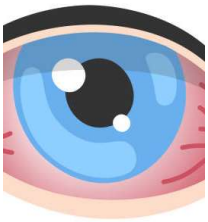
MANAGEMENT

- Cold compresses, cold artificial tears
- Handwashing, contagious spread precautions
- OTC antihistamine/decongestant drops
- Topical steroids—PRED!
- Remove pseudomembranes/topical steroids
- Corneal subepithelial infiltrates/topical steroids
- Betadine wash in office? Yes or no?
- Gancyclovir? Yes or no?



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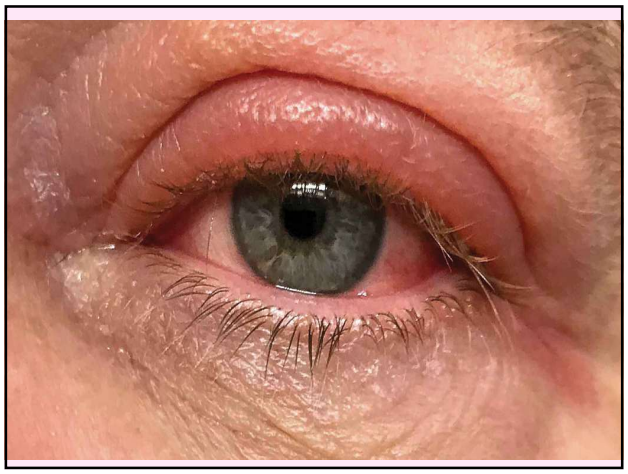

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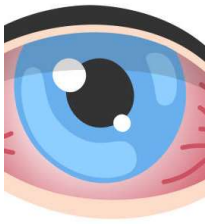
HEMORRHAGIC EKC

- Enterovirus or coxsackievirus
- Rapid onset often with more pain and photophobia than adenovirus
- Contagious until normal conjunctival color returns
- Pseudomembranes much LESS likely than with adenovirus



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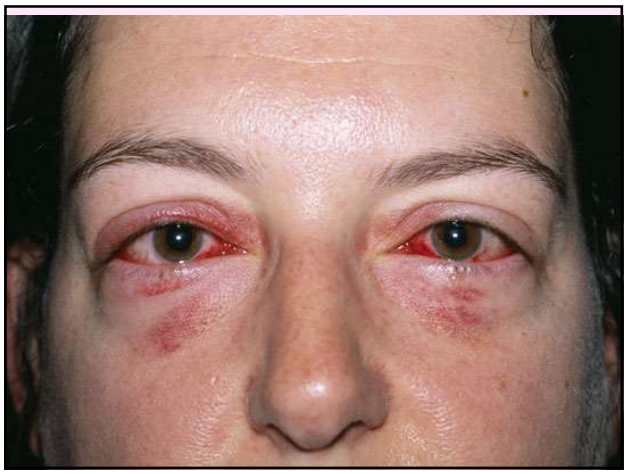

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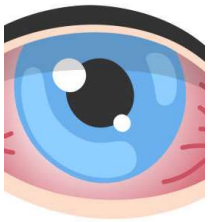
MICROSPORIDIA KERATITIS

- Protozoan parasites
  - Whitish-raised lesions
  - Irregular shaped
  - NOT SEIs
  - Not punctate like Thygeson's
  - Used to be rare, only seen in immunocompromised patients
- Also causes a follicular conjunctivitis similar to EKC
- Treat with moxifloxacin q2h for weeks to months
- NO STEROIDS!!



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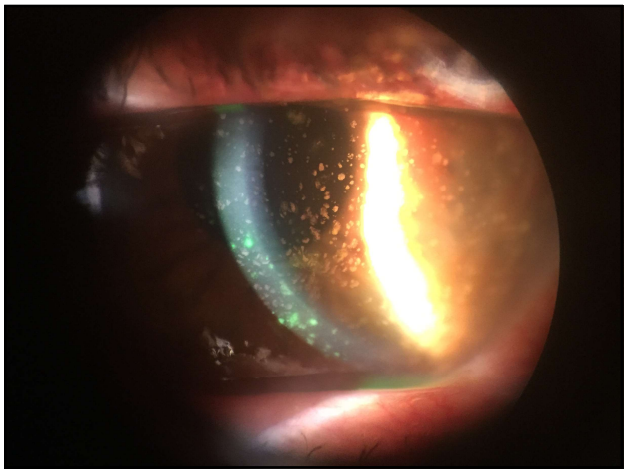

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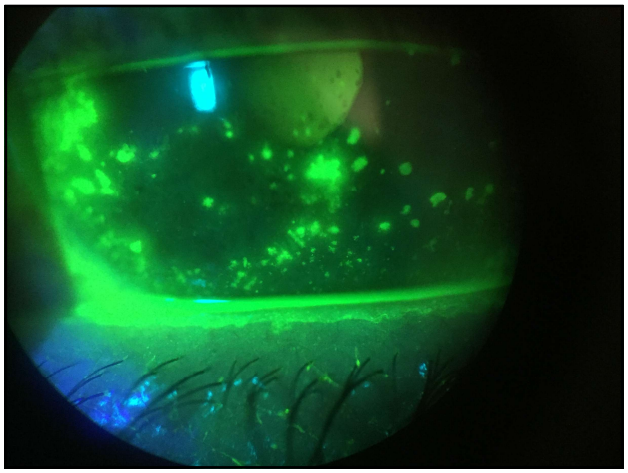

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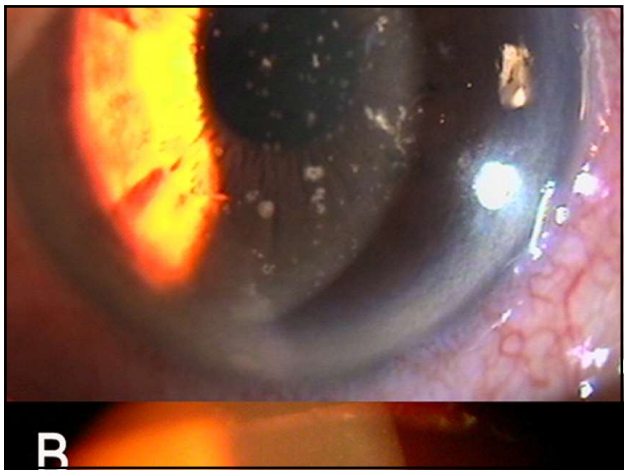

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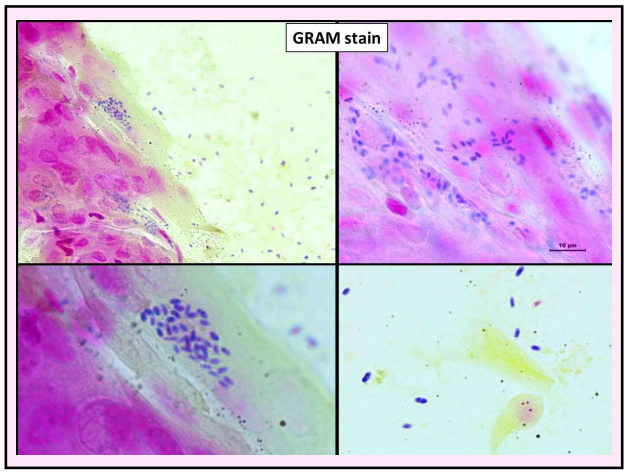

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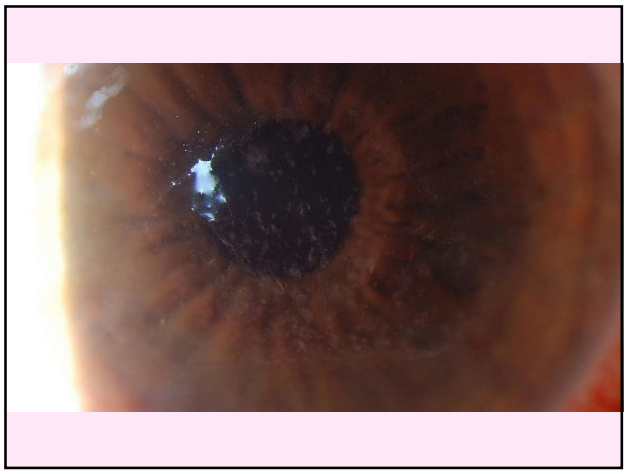

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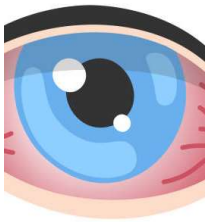
Herpes Simplex Conjunctivitis

- Type I herpes virus
  - Initial infection
    - May not even be aware of infection
  - Recurrent infections
    - Virus lies dormant and is triggered by various factors
    - Occurs in one eye only, same eye each recurrence
- Conjunctivitis often with periocular skin vessicles
  - Self limiting in most cases
  - Can observe with AT and cold compresses
  - Can use antiviral if severe
  - Valtrex 500mg tid
  - Watch for corneal involvement
  - Always consider in unilateral conjunctivitis



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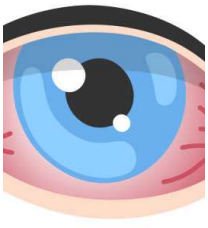
Herpes Zoster Conjunctivitis

- Associated with same-sided facial and periocular lesions that respect midline
- More common in elderly & immunocompromised patients
- Patients need high dose oral antivirals ASAP (valtrex 1 gram tid)
- Conjunctivitis
  - Most common ocular condition caused by zoster
  - Hyperemia, watery discharge, petechial hemorrhages
  - May be associated with keratitis and/or uveitis
  - Treat conjunctivitis conservatively unless corneal or intraocular involvement
    - Cold compresses, artificial tears



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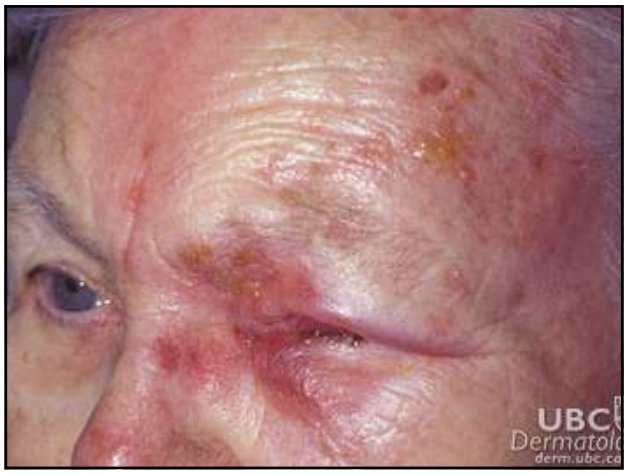

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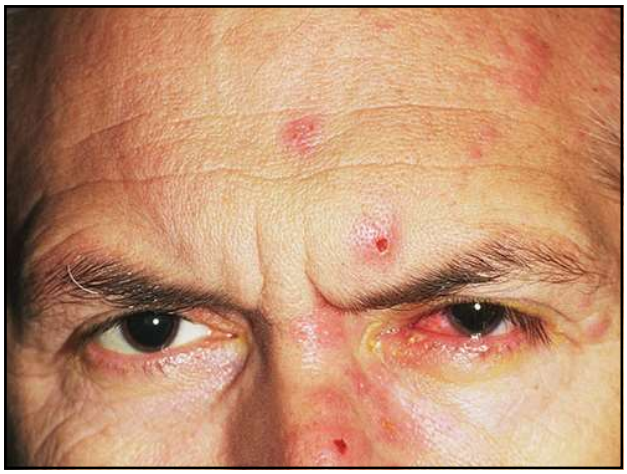

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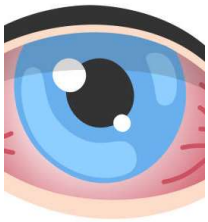
Molluscum Conjunctivitis

- More often unilateral than bilateral; depends on location of lesions
- Causes a follicular conjunctivitis
- Look for typical pearly-white, dome-shaped, raised papule with an umbilicated center
- Found on the eyelids and/or eyelid margins
- More common in children
- Lesion(s) must be removed for cure of chronic conjunctivitis



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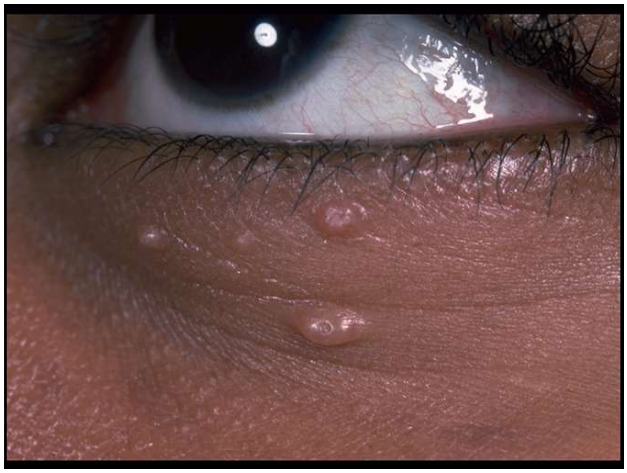

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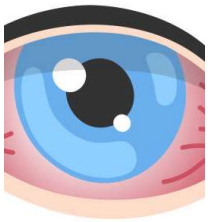
BACTERIAL CONJUNCTIVITIS

- More likely with patients younger than 7 years old
- Purulent, yellow to green, thick discharge (not watery), matting in am
- Non-pathologic follicles may be present given age of most patients
- More likely to stay unilateral than viral conjunctivitis
- Self-limiting even without treatment
- Fluoroquinolone antibiotic x 5 days
- Polytrim x 5 days
- Recurrent unilateral think nasolacrimal duct blockage



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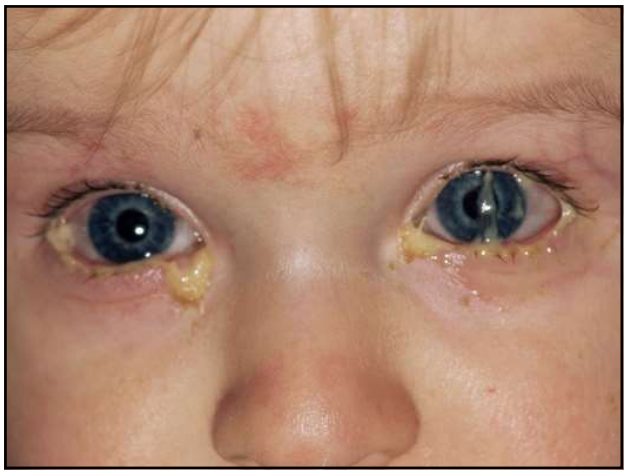

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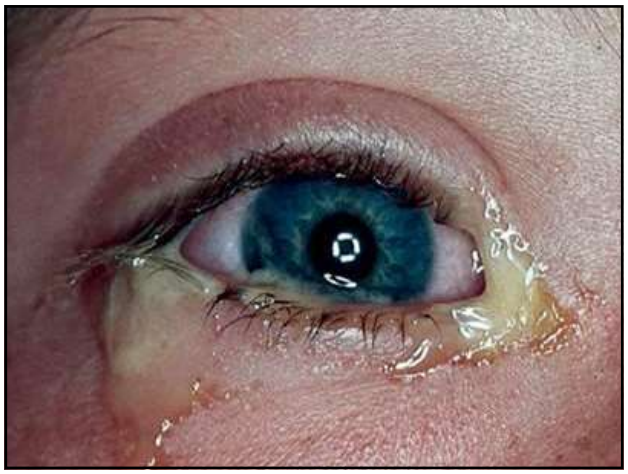

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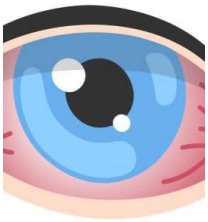
BACTERIAL CONJUNCTIVITIS MYTHS

- Matting is bacterial—not necessarily
  - Can be bacterial or viral or allergic
- Starts in one eye and moves to other is bacterial—not necessarily
  - More likely viral
- Mucous/mucopurulent material is bacterial—not necessarily
  - Watery, mucopurulent material in viral and allergic
- Most conjunctivitis is bacterial---ABSOLUTELY NOT!!!



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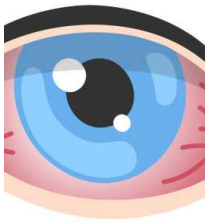
CHLAMYDIAL CONJUNCTIVITIS

- More unilateral than bilateral
- Seen more often in developing countries with severe sequelae leading to blindness
  - Often in newborns in endemic areas
- Positive PA node
- More likely to see limbal, bulbar follicles
- Increased suspicion with a chronic, follicular conjunctivitis (lasting 3 weeks or more)
  - Especially in sexually active patients
- Treat with one gram azithromycin
  - Consider repeat azithromycin in 2 weeks
  - Prescribe #4 500mg azithromycin tabs
    - Take 2 now and 2 in one week



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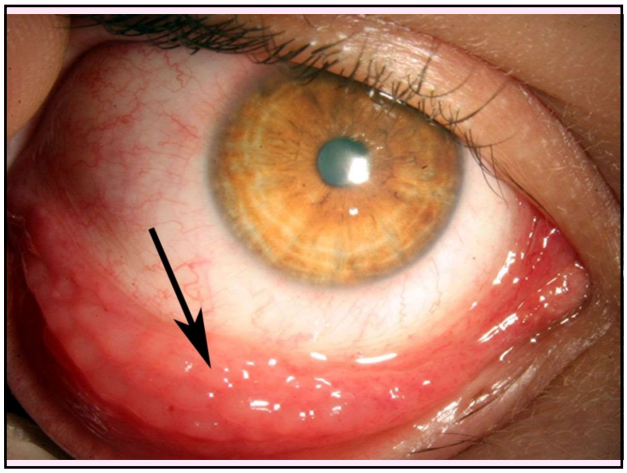

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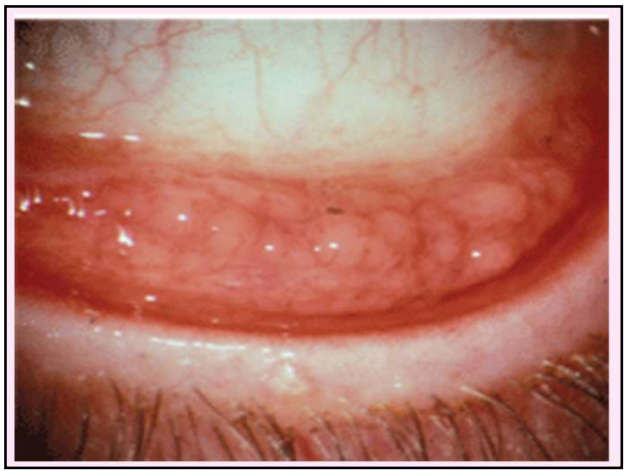

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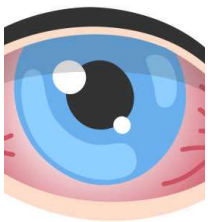
ALLERGIC CONJUNCTIVITIS

- Itching especially at inner canthus, epiphora, clear/watery discharge , hyperemia, conjunctival and eyelid edema, follicles with seasonal association
- Associated systemic allergies
  - Itchy throat and ear canals, runny nose, sneezing, rash, asthma, hay fever
- Seasonal or other allergen triggers
  - Pet dander, dust mites, mold, etc.
- Patients often self misdiagnose their dry eye as allergic conjunctivitis



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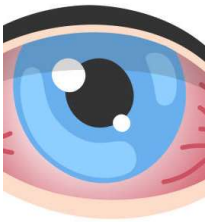
CLASSIFICATION OF ALLERGIC CONJUNCTIVITIS

- Seasonal allergic conjunctivitis
- Perennial allergic conjunctivitis
- Giant papillary conjunctivitis
  - Contact lens associated, UPPER lid papillae
- Vernal keratoconjunctivitis
  - More likely to have limbal papillae, young men/boys, shield ulcers, associated with keratoconus, UPPER lid papillae
- Atopic keratoconjunctivitis
  - Teenagers and young adults, atopy, papillary reaction UPPER and LOWER lids, thickened lids



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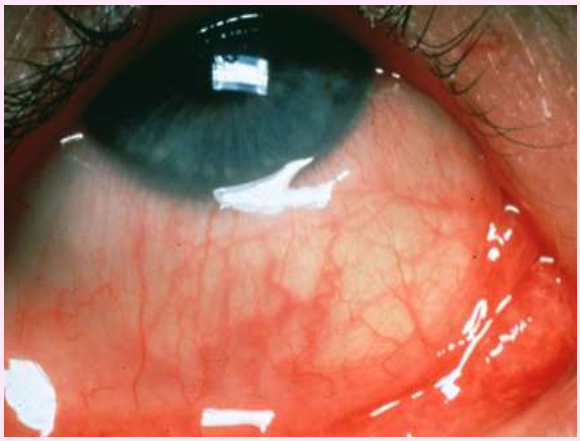

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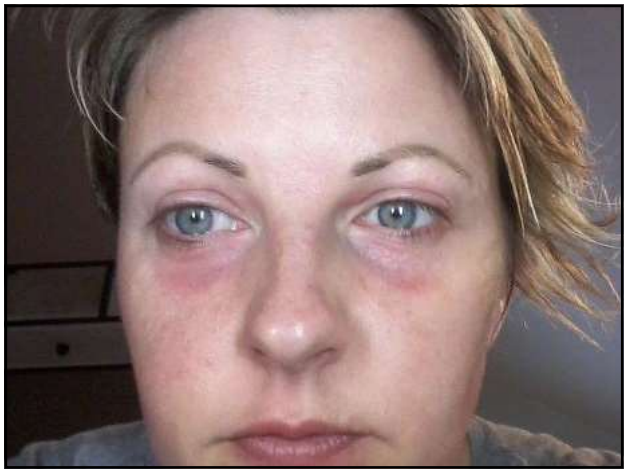

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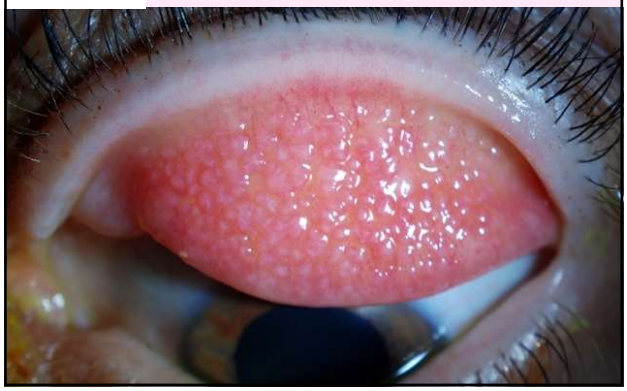
GIANT PAPILLARY CONJUNCTIVITIS



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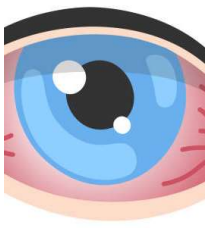
GPC TREATMENTS

- Switch to dailies
- Decrease wearing time
- NSAID qd to bid
- Short term pulse steroids
- Look at lids, do they need treatment
- RGPs/sclerals better for patient



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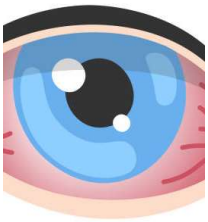
VKC VS AKC

- VKC
  - Younger males, onset usually before 10 years of age
  - Tranta's Dots
  - Upper tarsus more affected
  - Shield ulcer possible
- AKC
  - Later onset in late adolescence or early adulthood
  - Inferior tarsus more affected
  - Associated eczema/dermatitis
  - More associated lid disease
  - More common in families



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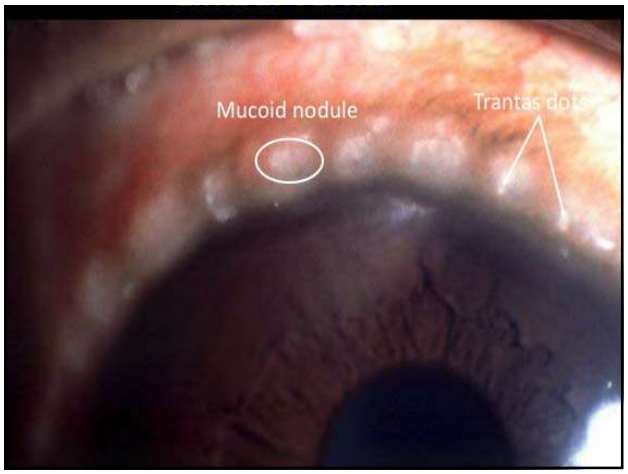

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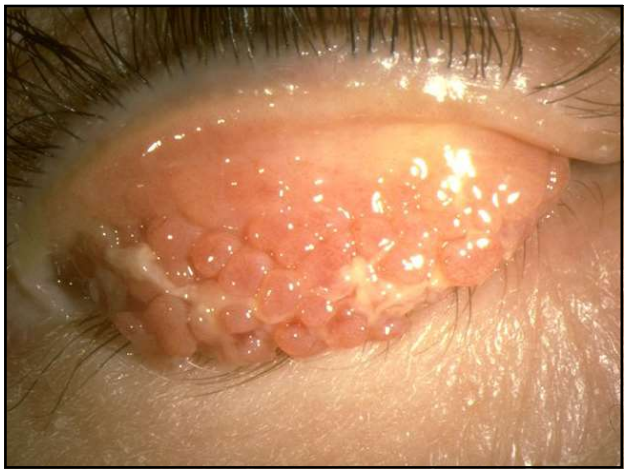

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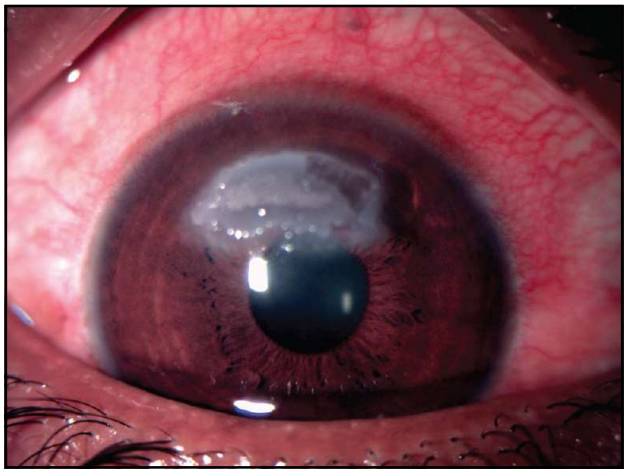

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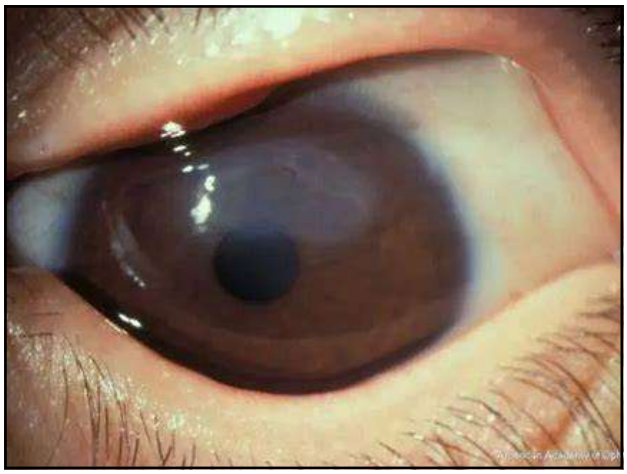

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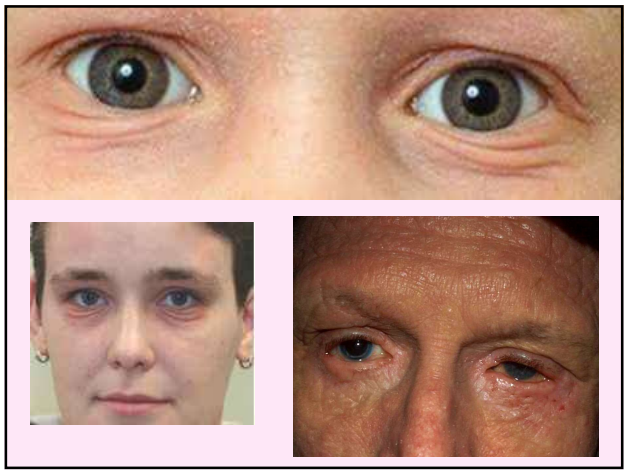

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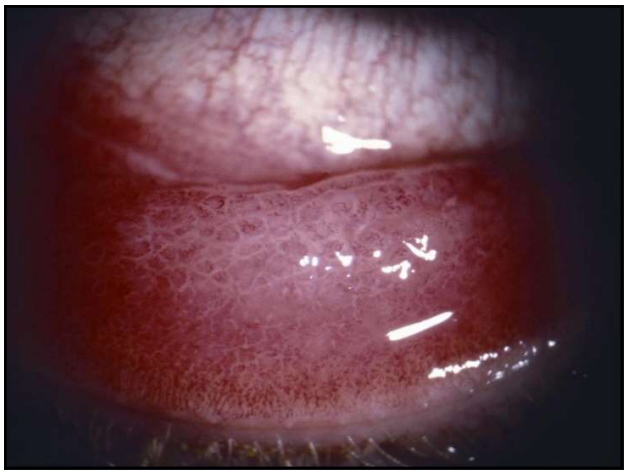

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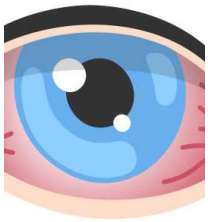
RANGE OF TREATMENTS

- Avoid all allergens/cold compresses/cold artificial tears
- Oral and topical antihistamines/mast cell stabilizers
- Topical immunomodulators
- Topical corticosteroids
- Oral steroids in severe cases
- Referral to allergist/dermatologist for possible systemic treatments
- Debridement and amniotic membranes for moderate to severe shield ulcers



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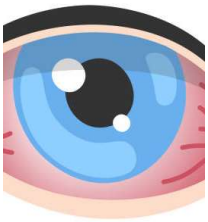
TOXIC CONJUNCTIVITIS

- Long-term, frequent use of ophthalmic med
- Hyperemia, corneal staining/edema/infiltrates
- Burning, photophobia, blurred vision, grittiness
- Visine (other ocular decongestants)
- Gentamicin/Tobramycin/Neomycin
- Trifluridine
- Preservatives (BAK)
- Prostaglandins
- Toxic follicular conjunctivitis
  - Atropine, trifluridine, brimonidine, apraclonidine



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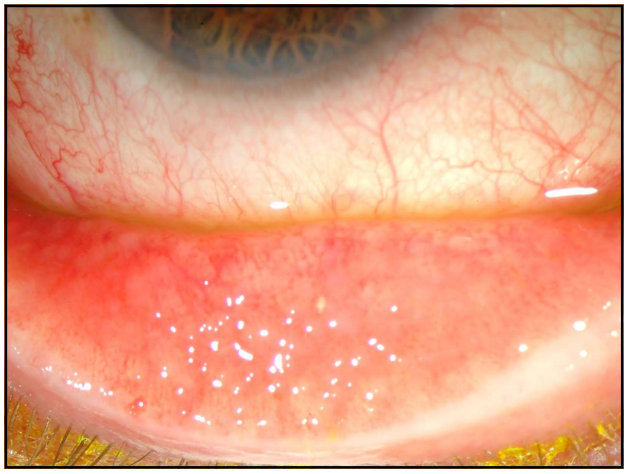

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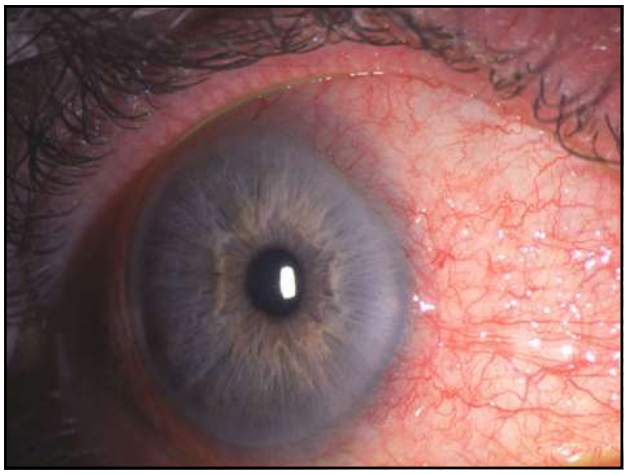
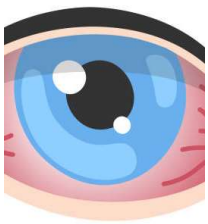


71

STERILE INFILTRATES

- White blood cell accumulation
- Individual or in groups
- More often at the limbus
  - Especially lower limbus if staph exotoxin sensitivity
- Small, gray-white, round or even pinpoint
- Not soupy or fluffy
- Asymptomatic to mild pain, good vision, no discharge, no AC reaction
- May have mild staining over infiltrates
  - Staining less than size of infiltrate



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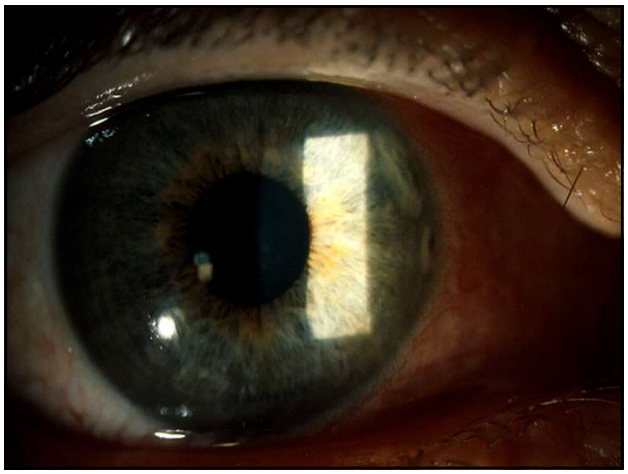

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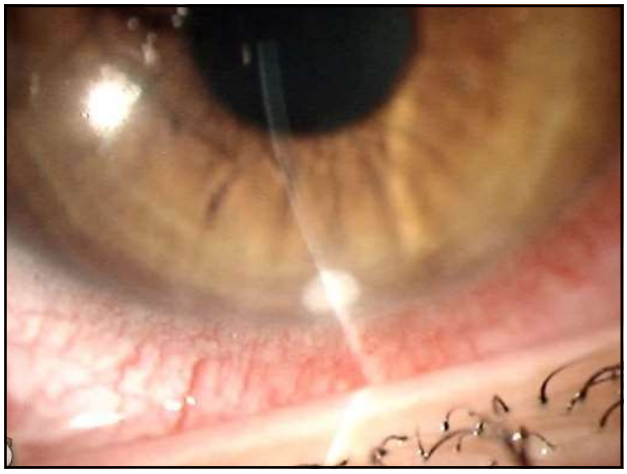

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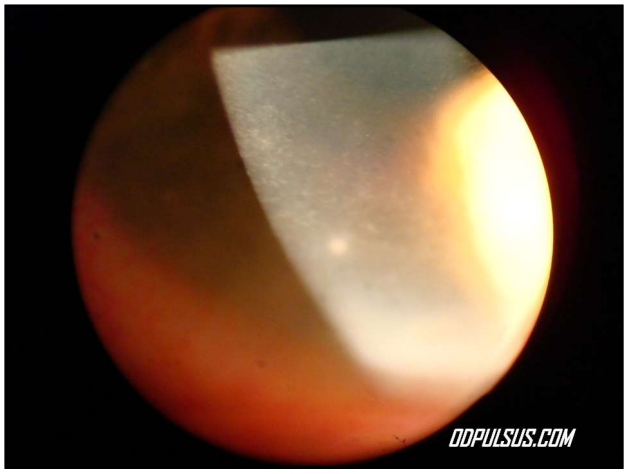

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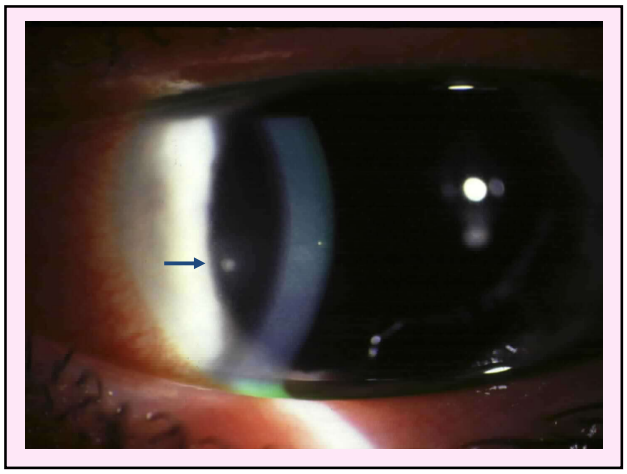

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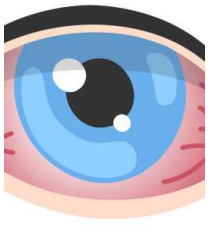
STAPH EXOTOXIN SENSITIVITY

- Non-infectious hypersensitivity to staph cell wall components
- Chronic hyperemia, mild photophobia and irritation, no AC reaction
- May or may not see blepharitis on eyelids
- Inferior corneal infiltrates predominate
  - Although can see nasal and temporal
- Corneal neovascularization/pannus
- Sterile ulcerations
- Bacitracin/erythromycin ung to lids/lashes qhs with lid hygiene/scrubs
- Topical corticosteroid pulse treatment



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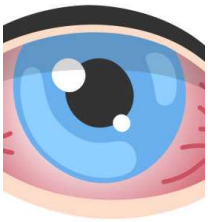
CONTACT LENS OVERWEAR

- Soft contact lens wear
  - Extended wear, overwear, noncompliance, sensitivity to material or solution
- Hypoxia with corneal edema
- Limbal sterile infiltrates at any location
- Corneal neovascularization 360
- Epithelial dysplasia
  - Thin pachs
  - Irregular topography
  - Change in Rx



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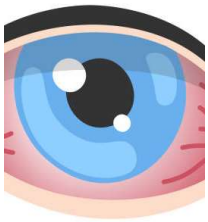
Demodex

- Two types of ocular parasitic mites
  - Demodex folliculorum (anterior bleph)
  - Demodex brevis (posterior bleph)
- High incidence with age and anterior bleph
  - Seen in 84% of patients 60 years of age
  - Seen in 100% of patients 70 years of age
- Inflammation due to mite bacillus production
  - May be association with acne and ocular rosacea
- Cylindrical sleeves on the lashes
- Epilation and microscopic analysis



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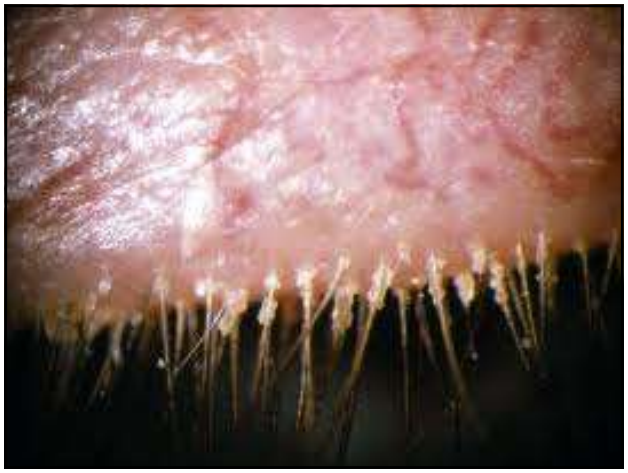

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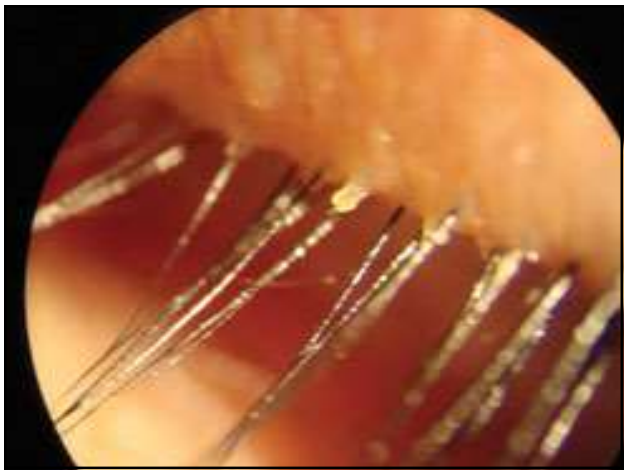

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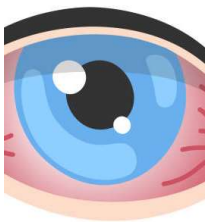
Clinical Presentation

- Anterior blepharitis with inflammation
  - Eyelid itching, chronic redness, burning, foreign body sensation, crusting of eyelashes
- Refractory to other treatments
- Increased symptoms in the morning
- Associated ocular and acne rosacea
- Mites visible under microscope



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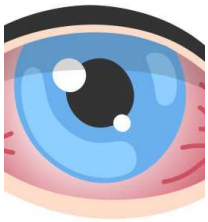
Demodex Treatment

- Tea tree oil products
  - Commercially and OTC available
  - Compounded 50% tea tree oil scrubs
    - To eyebrows and eyelids once weekly for one month
    - Apply to lid margin with Q-tip
    - Anesthetic first!
  - Tea tree oil shampoo (10%) to hair, eyebrows, and eyelid margins nightly for one month
  - Scrubs, foams, sprays
- Lid hygiene



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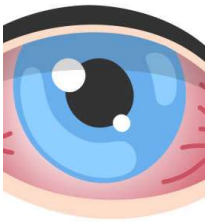
FDA APPROVED DEMODEX TREATMENT

- Lotilaner 0.25% ophthalmic solution
- Xdemvy (x-dem-vee)
- Bid treatment for six weeks
- Saturn-1 and Saturn-2 trials
- Met primary and secondary endpoints
- Safe and effective
- Well tolerated
- Specialty pharmacies are the best way to go



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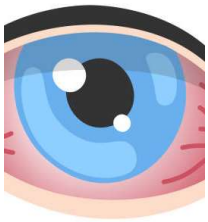
Pthiriasis/Pediculosis Infestation

- Pthirus pubis (pubic lice) more common periocular infestation
- Less mobile and prefers eyelashes compared with pediculus species (body or head)
  - More coarse hair
  - Close lash base proximity
- Signs/symptoms
  - Bilateral ocular itching and inflammation
  - Visible organisms, skin bites, brown feces deposits



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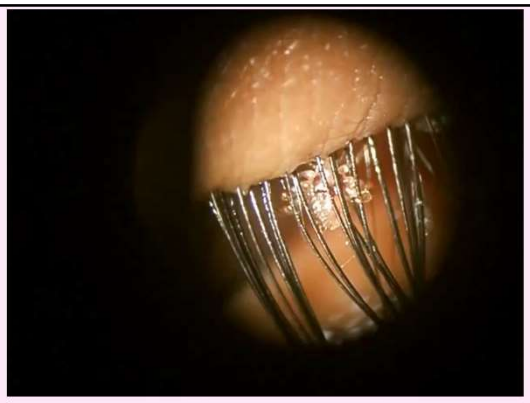

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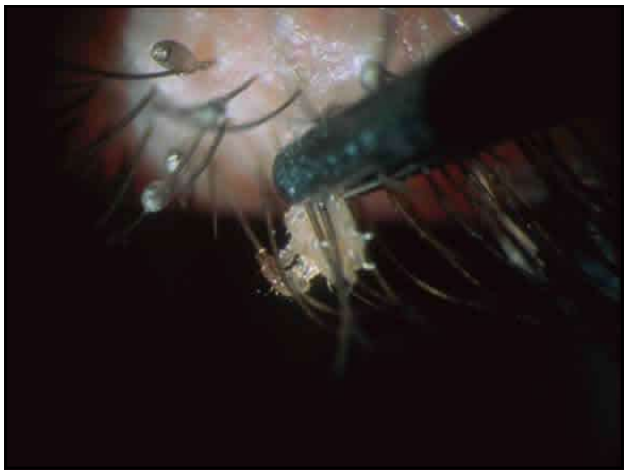

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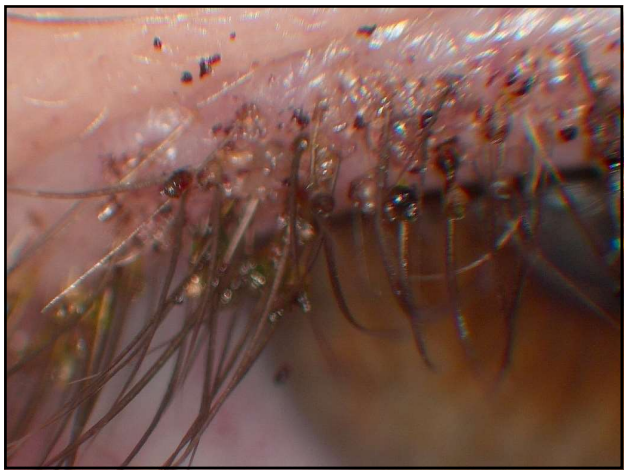

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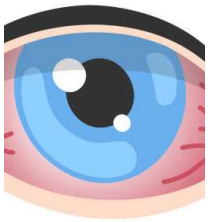
PTHIRIASIS TREATMENT

- Resistant to mechanical and chemical removal
- Recommend removal of organisms and nits (eggs) with forceps
- Trim eyelashes and eyebrows, shave beard if present
- Use Rid, Kwell, Nix or similar pediculocitic OTC shampoo to hair
- Apply Lacrilube nightly to lashes and eyebrows for one month
- Wash all bedding, clothes, etc. that might have existing organisms
- Educate patient on cause and spread of disease
- See general practitioner for work-up including other STDs



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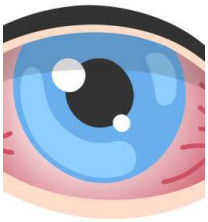
FLOPPY EYELID SYNDROME

- Severe laxity of upper eyelids that evert easily and/or spontaneously
- More common in overweight males who sleep on their face or on the affected side if asymmetric
- Associated with
  - obstructive sleep apnea
  - Keratoconus
- Chronic hyperemia, irritation, burning, FBS, epiphora
- Papillary reaction on eversion of upper eye lid, microabrasions, mucous discharge, lateral eyelash ptosis
- Manage by taping lids/sheild/mask at bedtime, nighttime ointment, don't sleep on face
- Sleep study referral



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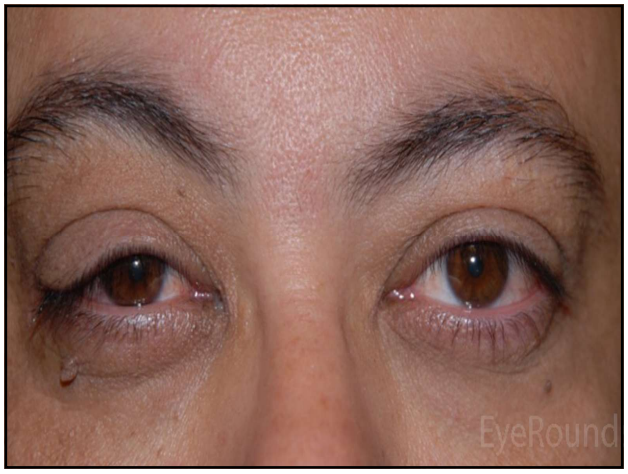

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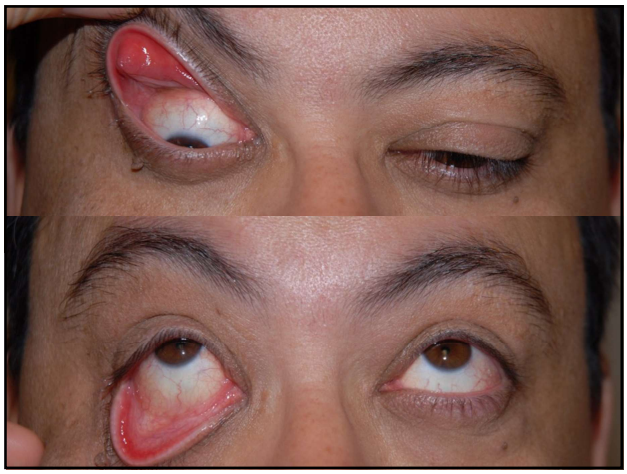

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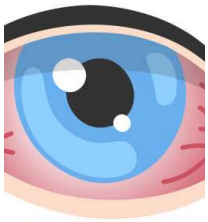
FOREIGN BODY

- History of foreign body exposure
- Foreign body found during examination
- Beware of "musta got something in my eye"
- Hammering metal, welding, etc. concern for ocular penetration—look for penetration into eye (iris exam, lens exam, dilation)
- Removal of any foreign body found
- Antibiotic, patch or BCL, cycloplegic, "Comfort drops" an option



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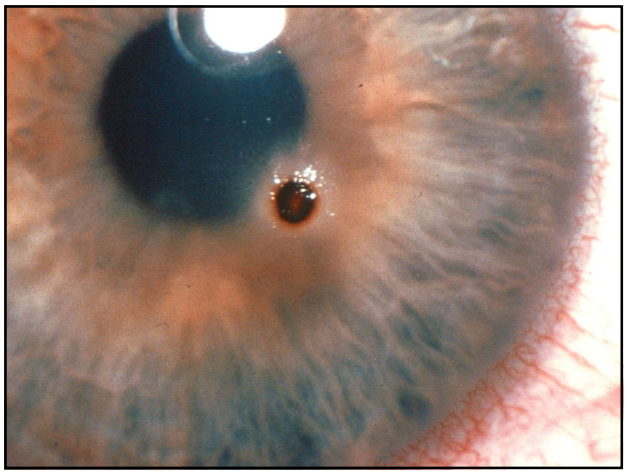

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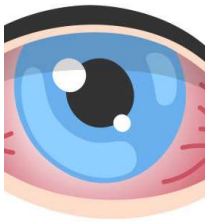
CONJUNCTIVOCHALASIS

- Redundant, loose conjunctiva
  - Inferiorly, mostly inferior temporal
- Appears more in downgaze
  - Disappears with lower lid retraction
- Mostly due to aging or chronic OSD
- Can also be cause of chronic OSD
- Can be cause of epiphora if blocks punctum or normal tear movement
- Treatment options
  - Excision with/without fibrin glue or amniotic membrane/autograft
  - Thermal cautery-painful



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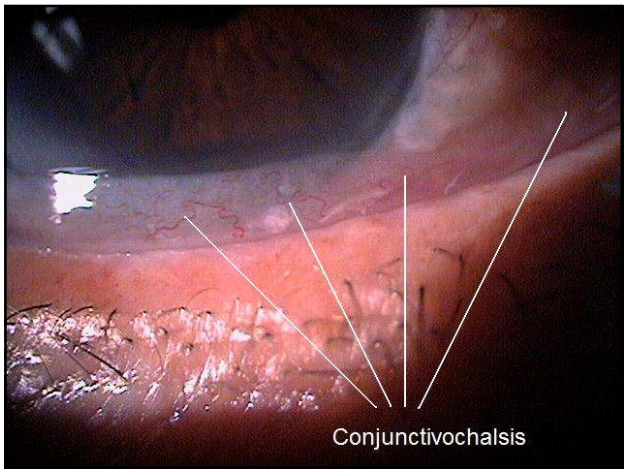

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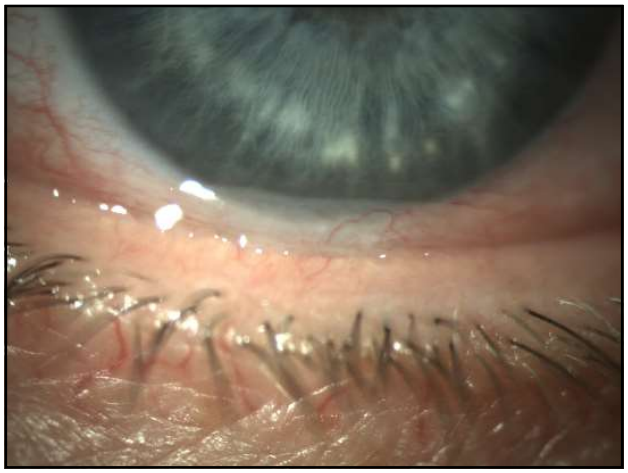

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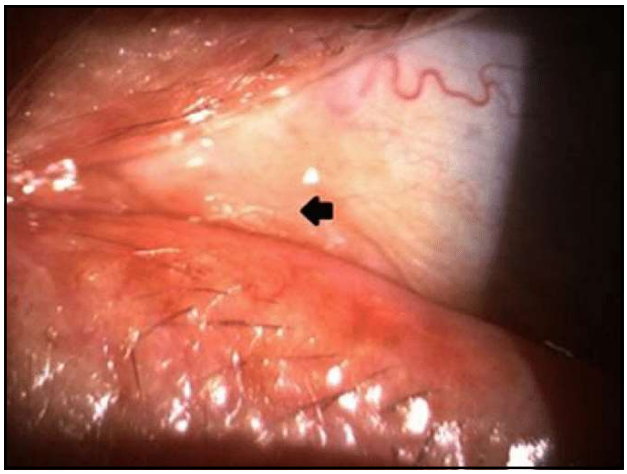

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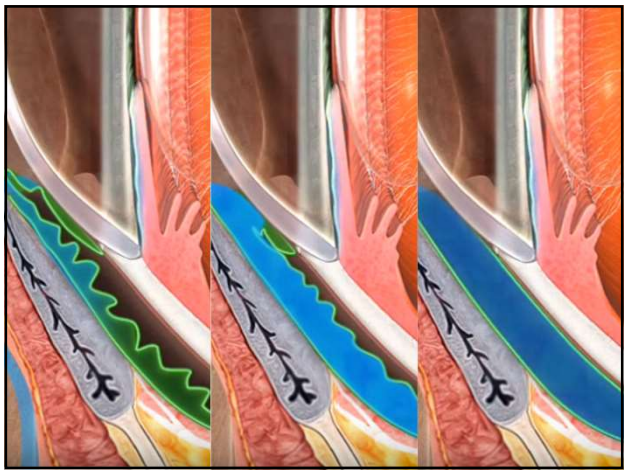

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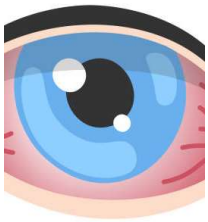
RECURRENT CORNEAL EROSION

- Recurrent corneal erosions (RCE) more common with history of traumatic abrasion with jagged etiology or EBMD
- Patient often awakes with new abrasion or microabrasions which heal by the time they see you
- Does not look like typical clean abrasion
- Bandage CL and antibiotic
  - Can leave on for 2 weeks if history fits
  - Once healed then Muro-128 5% ointment nightly x 6 weeks
  - Amniotic membrane with antibiotic is option
- With continued recurrences consider referral for epi-peel (with amniotic membrane placement)



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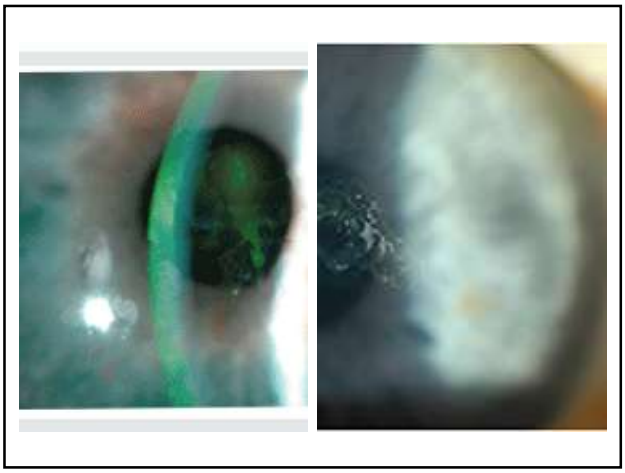

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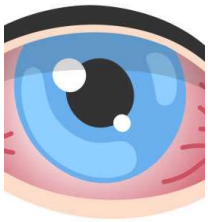
SUPERIOR LIMBIC KERATITIS

- Bilateral inflammation of superior bulbar conjunctiva
  - Although can be asymmetric
- Redness, FBS, photophobia, epiphora, burning, blepharospasm
- Hyperemia, thickening, and staining of superior cornea and bulbar conjunctiva at area of superior limbus
  - May even see filaments superior cornea
  - May have fine papillary reaction of upper lid
  - May have eyelid edema/induced ptosis
- Redundant conjunctival tissue superiorly
- Women>Men, 3:1-most commonly 30-60 years old
- Up to 50% cases associated with thyroid disease



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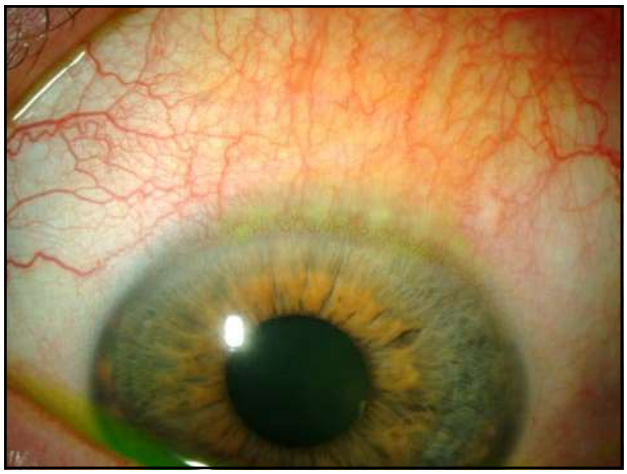

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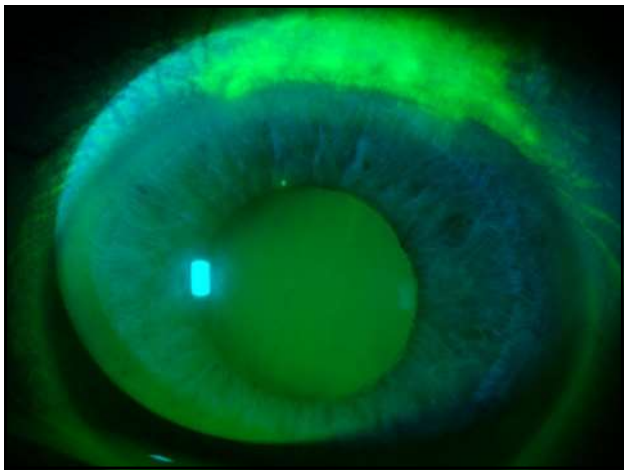

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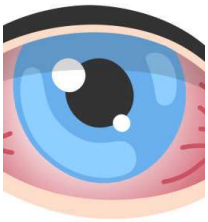
TREATMENT/MANAGEMENT

- Multifactorial in origin and treatment options
- Bloodwork for thyroid disease
- Increase lubrication/punctal plugs/serum drops
- Bandage CL
- Topical NSAIDs/Corticosteroids/Immunomuodulators
- Surgical options
  - Silver nitrate cautery-very painful and outcomes are variable
  - Conjunctival resection-better tolerated and better outcomes
- Will often "burn out" over time
  - Consider immunomodulator (cyclosporine) once controlled



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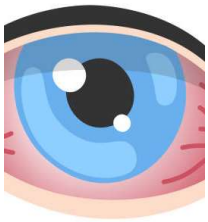
DRY EYE

- Chronic burning, gritty feeling, hyperemia, fluctuating vision, epiphora, "eyes always tired"
  - Worse at end of day, worse with CL wear, worse in wind, ceiling fan use, direct A/C
- Women, peri/postmenopausal, hx refractive surgery, meibomian gland disease, rosacea, autoimmune disease, computer use, certain meds
- SPK, decreased TBUT, low tear meniscus, oily tear film



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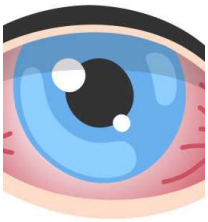
RANGE OF TREATMENT

- Environmental changes
- Artificial tears/gels/ointments/Lacrisert
- Meibomian gland treatments/Miebo
- Immunomodulators (Restasis, Cequa)
- Xiidra
- Topical steroids
- Punctal plugs
- Serum tears
- Scleral lenses
- Oral secretagogues
- Treat underlying systemic disease
- Intense pulsed light therapy
- Tyrvaya



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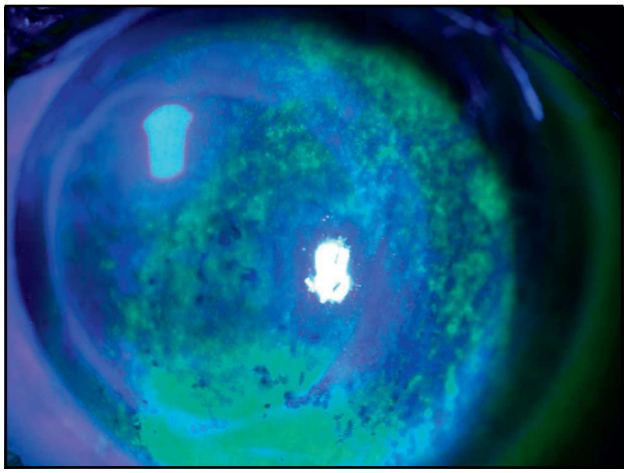

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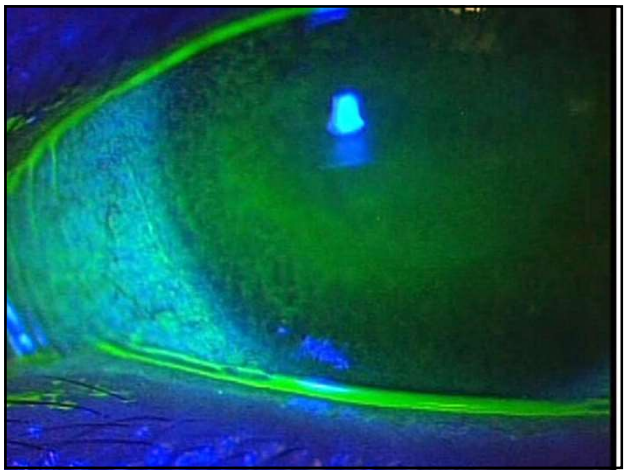

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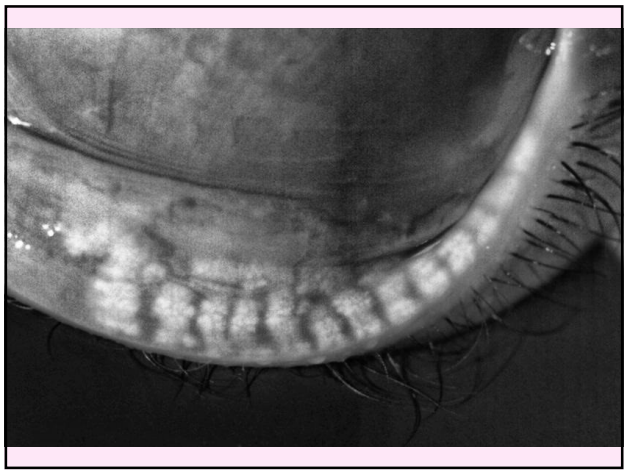

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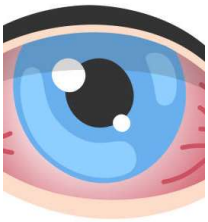
ROSACEA

- Redness/telangiectasia/papules on the cheeks, nose, and forehead/rhinophyma
- More common in women/more severe in men
- Fair or light skinned patients more common and more severe
- Increased meibomian gland dysfunction and blepharitis
- Induced redness of eyelids/dry eye/chronic hyperemia
- Ocular rosacea can proceed facial rosacea



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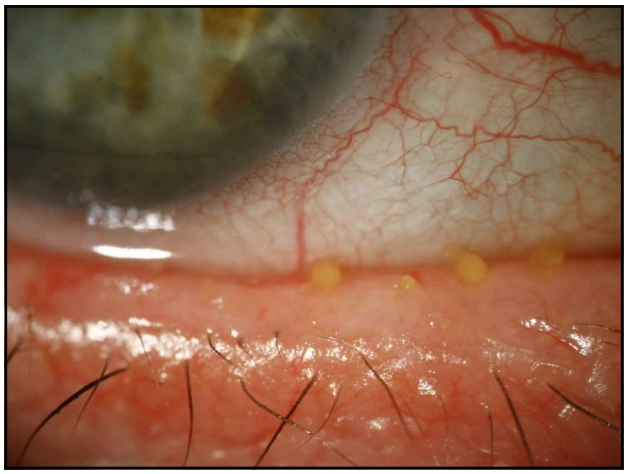

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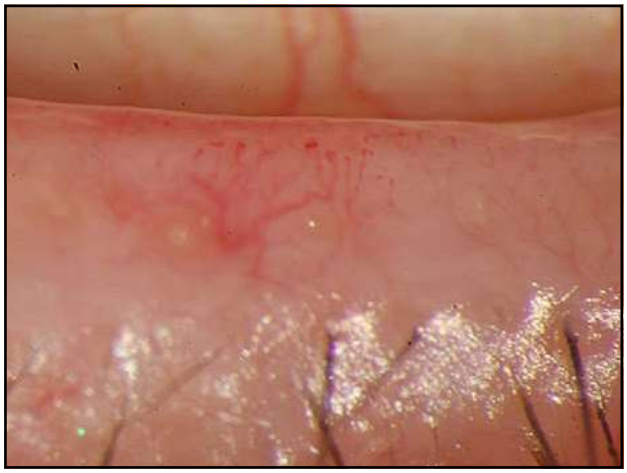

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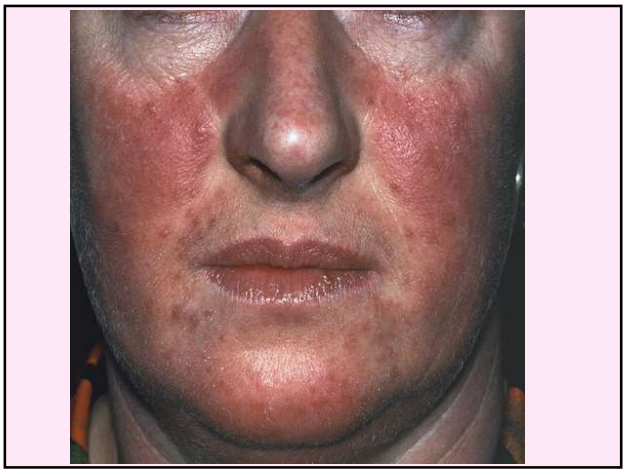

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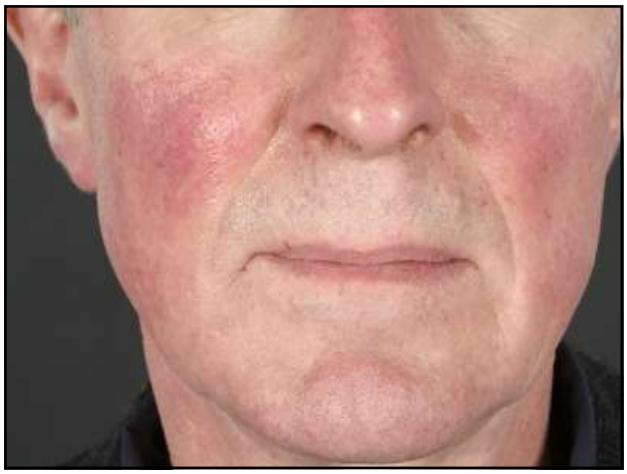

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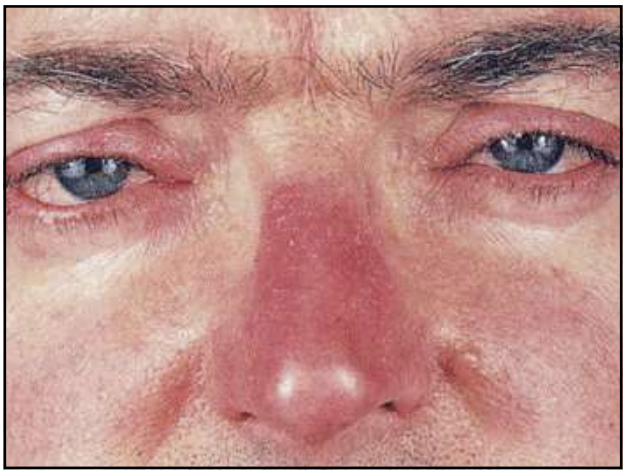

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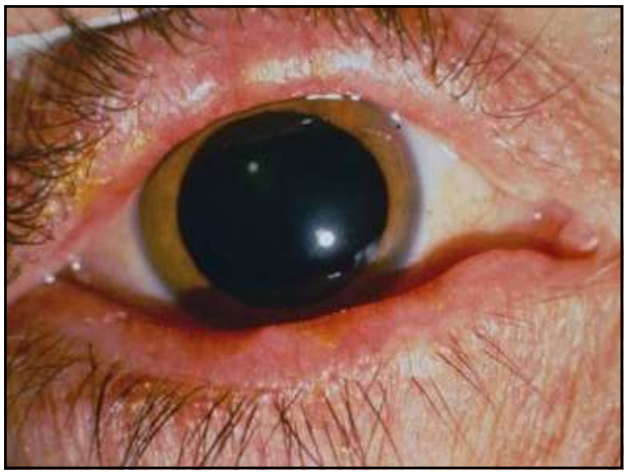

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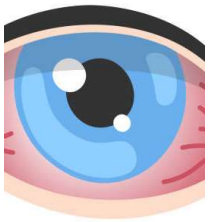
MANAGEMENT

- Recognition
- Doxycycline 50 mg qd to bid
  - No use in children less than 8 years old/pregnant/nursing
  - TAKE WITH FOOD AND/OR DAIRY!!!
  - Cannot take with antacids
  - Can cause photosensitivity
  - Cannot take before lying down
    - Must wait 2 hours to avoid esophageal ulceration
- Xdemvy bid x 6 weeks
- Lid hygiene, meibomian gland treatments
- Topical steroid drops/ungs/Miebo
- Dermatology referral



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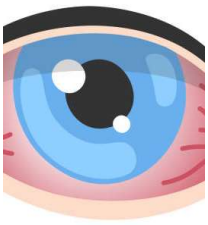
THYROID EYE DISEASE

- Autoimmune disease
- Chronic hyperemia
- Dry eyes
- No discharge, no itching
- Exophthalmos, intermittent diplopia, lid lag, lagophthalmos
- Ocular discomfort/ache especially at night
- Lubrication, taping lids at night, pulse steroids



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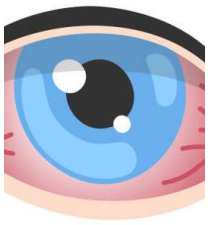
TESTING IN THYROID EYE DISEASE

- CT of orbits without contrast
  - Please note EOM size and thickness
  - Please note distance from inter-zygomatic line to globe apex
- Visual field
- Thyroid blood testing
  - TSH and free T4
  - Remember that thyroid levels may be normal and still have TED
- Referral for Tepezza evaluation to oculoplastics/endocrinology/neuro-OMD



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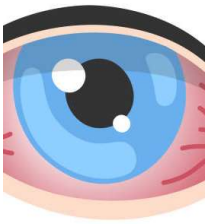
TEPEZZA

- First and only FDA-approved treatment for TED
- 8 infusions total
  - One every three weeks for approx. 5 months
  - Results as soon as 6 weeks
- Clinically significant reduction in
  - Proptosis (86%)
  - Diplopia (70%)
  - Clinical Activity Score (97%)



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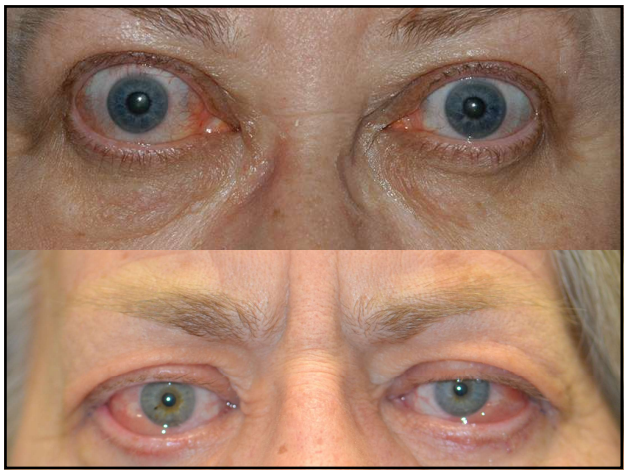

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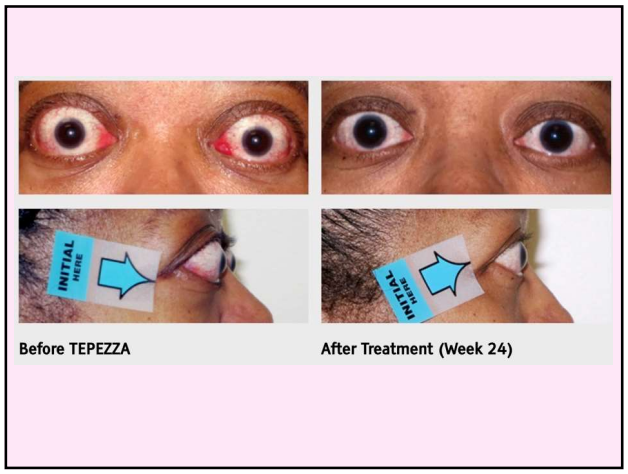

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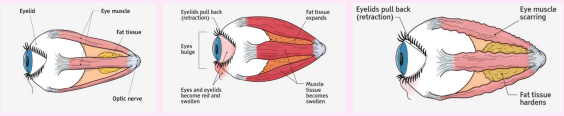
Thyroid Eye Disease Stages



Normal | Acute Phase | Chronic Phase

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