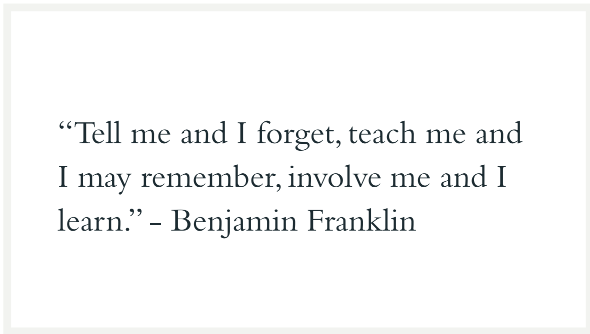
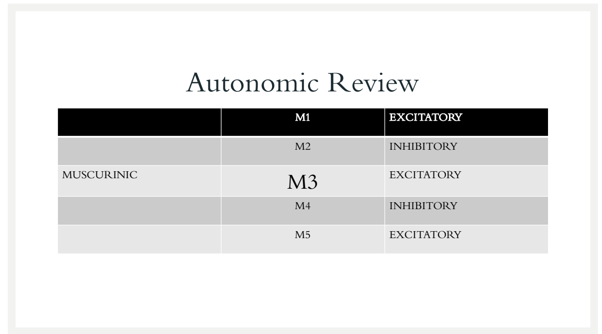
1

2

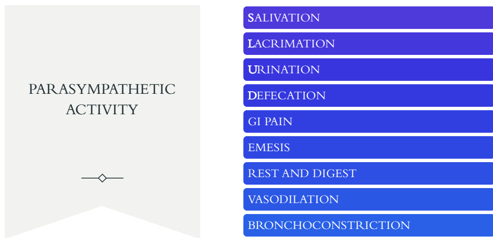


3



	M1	EXCITATORY
	M2	INHIBITORY
MUSCURINIC	M3	EXCITATORY
	M4	INHIBITORY
	M5	EXCITATORY

4



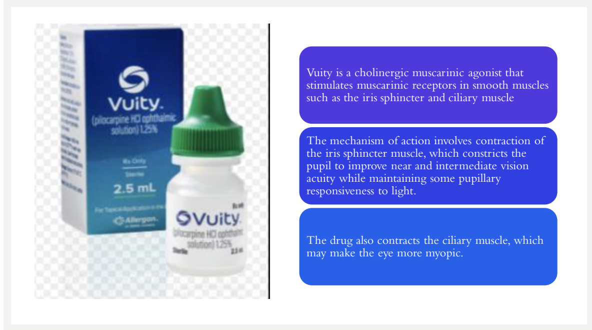
5

6

PILOCARPINE

- ANGLE CLOSURE GLAUCOMA
- ADIE'S TONIC PUPIL
- PRESBYOPIA MANAGEMENT

7



8

PILOCARPINE

- HEADACHES
- BROW ACHE
- MYOPIC SHIFT
- CATARACTS
- RETINAL DETACHMENT

9

SYMPATHETIC ACTIVITY

- MYDRIASIS
- VASOCONSTRICTION
- FIGHT OR FLIGHT
- BRONCHODILATION
- DRYNESS

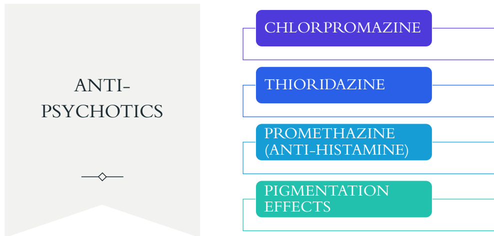
10

CHOLINERGIC ANTAGONISTS

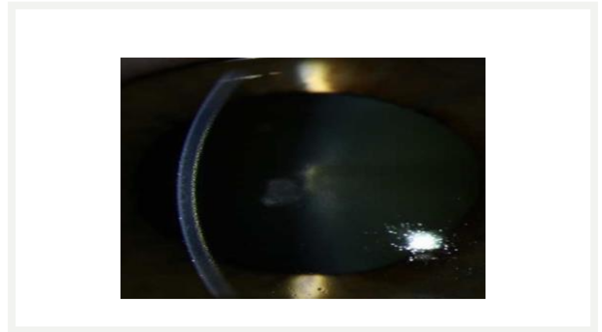
- MYDRIASIS – CAUTION IN NARROW ANGLES
- DRY EYE

11

12



13

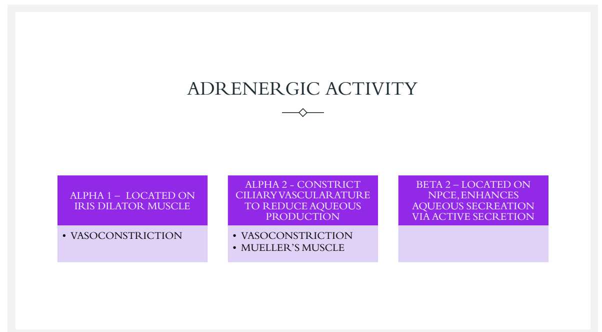


14

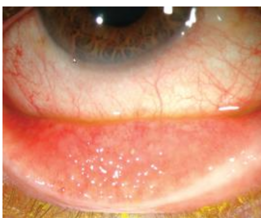
Autonomic Review

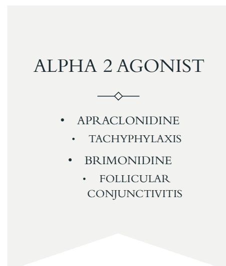
	ALPHA 1	EXCITAROY
ADRENERGIC	ALPHA 2	INHIBITORY
	BETA 1	EXCITATORY
	BETA 2	EXCITATORY

15

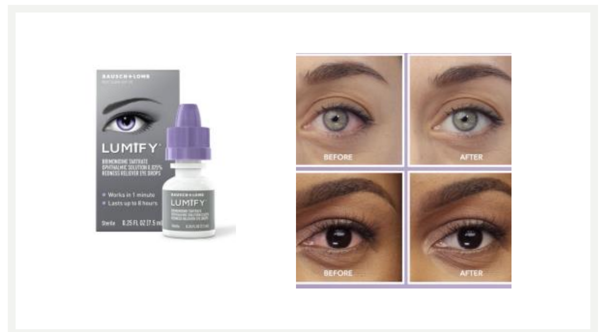


16





17



18

UPNEEQ
(oxymetazoline hydrochloride ophthalmic solution), 0.1%

19

Upneeq® Lifts the Upper Eyelids*

Mild

Before Upneeq instillation

After Upneeq instillation (2 hr)

*Individual results may vary. Images are of an actual patient. Average upper eyelid lift with Upneeq in clinical trials was 1mm.[1]

Patients should not touch the tip of the single patient-use container to their eye or to any surface, in order to avoid eye injury or contamination of the solution.

20

Upneeq® Lifts the Upper Eyelids*

Moderate

Before Upneeq instillation

After Upneeq instillation (2 hr)

*Individual results may vary. Images are of an actual patient. Average upper eyelid lift with Upneeq in clinical trials was 1mm.[1]

Patients should not touch the tip of the single patient-use container to their eye or to any surface, in order to avoid eye injury or contamination of the solution.

21

Upneeq® Lifts the Upper Eyelids*

Severe

Before Upneeq instillation

After Upneeq instillation (2 hr)

*Individual results may vary. Images are of an actual patient. Average upper eyelid lift with Upneeq in clinical trials was 1mm.[1]

Patients should not touch the tip of the single patient-use container to their eye or to any surface, in order to avoid eye injury or contamination of the solution.

22

WHORL KERATOPATHY

- CHAI T
- CHLOROQUINE
- HYDROXYCHLOROQUINE
- AMIODARONE
- INDOMETHACIN
- TAMOXIFEN

23

HYDROXYCHLOROQUINE

- HYDROXYCHLOROQUINE (HCQ) (I.E., PLAQUENIL®) INHIBITS THE ENZYME PHOSPHOLIPASE A2 IN ORDER TO REDUCE INFLAMMATION
- USED TO TREAT
  - MALARIA
  - SYSTEMIC LUPUS ERYTHEMATOSUS
  - RHEUMATOID ARTHRITIS
  - INFLAMMATORY AND DERMATOLOGICAL CONDITIONS
- TRADITIONALLY PRESCRIBED IN 200 OR 400 MG TABLETS WITH TOTAL DOSE BASED ON IDEAL BODY WEIGHT (IBW) TO REDUCE TOXICITY

24

AMERICAN ACADEMY™ OF OPHTHALMOLOGY

CrossMark

American Academy of Ophthalmology Statement

Recommendations on Screening for Chloroquine and Hydroxychloroquine Retinopathy (2016 Revision)

Michael F. Marmor, MD,[1] Ulrich Kellner, MD,[2] Timothy Y.Y. Lai, MD, FRCOphth,[3] Ronald B. Melles, MD,[4] William F. Mieler, MD,[5] for the American Academy of Ophthalmology

Background: The American Academy of Ophthalmology recommendations on screening for chloroquine (CQ) and hydroxychloroquine (HCQ) retinopathy are revised in light of new information about the prevalence of toxicity, risk factors, fundus distribution, and effectiveness of screening tools.

Pattern of Retinopathy: Although the locus of toxic damage is parafoveal in many eyes, Asian patients often show an extramacular pattern of damage.

Dose: We recommend a maximum daily HCQ use of ≤5.0 mg/kg real weight, which correlates better with risk than ideal weight. There are no similar demographic data for CQ, but dose comparisons in older literature suggest using ≤2.3 mg/kg real weight.

Risk of Toxicity: The risk of toxicity is dependent on daily dose and duration of use. At recommended doses, the risk of toxicity up to 5 years is under 1% and up to 10 years is under 2%, but it rises to almost 20% after 20 years. However, even after 20 years, a patient without toxicity has only a 4% risk of converting in the subsequent year.

Major Risk Factors: High dose and long duration of use are the most significant risks. Other major factors are concomitant renal disease, or use of tamoxifen.

Screening Schedule: A baseline fundus examination should be performed to rule out preexisting maculopathy. Begin annual screening after 5 years for patients on acceptable doses and without major risk factors.

Screening Tests: The primary screening tests are automated visual fields plus spectral-domain optical coherence tomography (SD OCT). These should look beyond the central macula in Asian patients. The multifocal electroretinogram (mfERG) can provide objective corroboration for visual fields, and fundus autofluorescence (FAF) can show damage topographically. Modern screening should detect retinopathy before it is visible in the fundus.

Toxicity: Retinopathy is not reversible, and there is no present therapy. Recognition at an early stage (before any RPE loss) is important to prevent central visual loss. However, questionable test results should be repeated or validated with additional procedures to avoid unnecessary cessation of valuable medication.

Counseling: Patients (and prescribing physicians) should be informed about risk of toxicity, proper dose levels, and the importance of regular annual screening. Ophthalmology 2016;123:1386-1394 © 2016 by the American Academy of Ophthalmology.

Retinal toxicity from chloroquine (CQ) and its analogue hydroxychloroquine (HCQ) has been recognized for many years. Chloroquine toxicity remains a problem in many parts of the world, but is seen less frequently in the United States where the drug largely has been replaced by HCQ. Hydroxychloroquine is used widely for the treatment of systemic lupus erythematosus (SLE), rheumatoid arthritis, and related inflammatory and dermatologic conditions. It is now being considered for new applications in diabetes mellitus, heart disease, and adjunct cancer therapy. Thus, it is important for ophthalmologists and other physicians to understand the prevalence and risk factors for retinopathy.

The American Academy of Ophthalmology recommendations for screening that were published in 2011[1] are revised in this article to account for new scientific data. The recent publication of a large demographic study has shown that toxicity is not rare among long-term users of the drug, and the risk is highly dependent on the daily dose by weight.[2] These data showed that real weight was better than ideal weight for calculating dose, and lower risk was achieved with doses ≤5 mg/kg real weight. It also has been found that the classic "bull's-eye" distribution of toxicity is infrequent in patients of Asian heritage,[3,4] who typically show early damage in a more peripheral pattern.

1386

© 2016 by the American Academy of Ophthalmology

Published by Elsevier Inc.

http://dx.doi.org/10.1016/j.ophtha.2016.01.058

ISSN 0161-6420/16

25

KEY TAKEAWAY:

- THE AMERICAN ACADEMY OF OPHTHALMOLOGY (AAO) RECENTLY REVERSED THIS RECOMMENDATION BASED ON EVIDENCE THAT DOSING BASED ON ACTUAL BODY WEIGHT (ABW), WITH A MAXIMUM DOSE OF < 5 MG/KG/DAY, IS MORE PREDICTIVE OF RETINAL TOXICITY AND IS MORE ACCURATE ACROSS A WIDER RANGE OF BODY TYPES

26

- LESS THAN 135 POUNDS IF TAKING THE STANDARD 400 MG/DAY DOSAGE OF PLAQUENIL®.
- THE OVERALL PREVALENCE OF BULL'S-EYE MACULOPATHY IN PATIENTS TAKING HCQ FOR AT LEAST 5 YEARS IS 7.5%
- FOR PATIENTS TAKING 4-5 MG/KG/DAY (BASED ON ABW), THE PREVALENCE OF RETINAL TOXICITY
- REMAINED LESS THAN 2% WITHIN THE FIRST 10 YEARS
- INCREASED TO 20% AFTER 20 YEARS
- THE RISK OF MACULAR TOXICITY EXCEEDED 50% AT 20 YEARS IN PATIENTS TAKING > 5.0 MG/KG/DAY BASED ON ABW

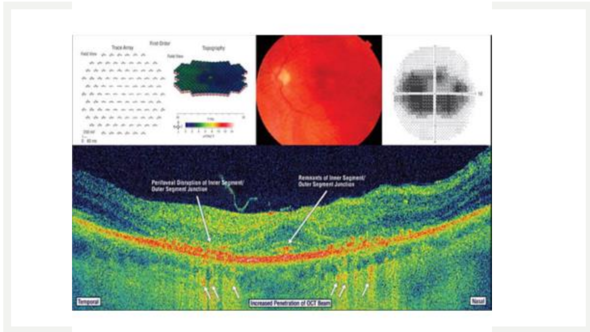
27

- RISK FACTORS FOR MACULAR TOXICITY
- DOSE > 5.0 MG/KG ABW PER DAY
- TREATMENT DURATION > 5 YEARS
- ABNORMAL KIDNEY FUNCTION
- CONCURRENT USE OF TAMOXIFEN
- PRE-EXISTING MACULAR DISEASE

28

29

30



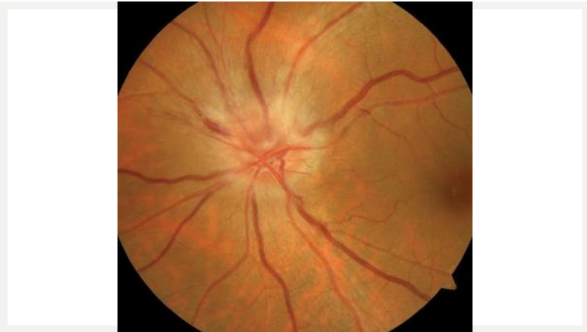
31

- BEGIN ANNUAL EXAMS AFTER 5 YEARS OF HCQ USE UNLESS THE PATIENT HAS RISK FACTORS FOR MACULAR TOXICITY OR TAKING A HIGHER THAN RECOMMENDED DOSE
- 10-2 AUTOMATED VF
- CONSIDER ALSO 24-2 OR 30-2 IN ASIANS
- SD-OCT OF MACULA
- ADDITIONAL TESTS TO CONSIDER
- FUNDUS AUTOFLUORESCENCE
- EARLY: HYPERFLUORESCENCE
- LATE: MOTTLED HYPOFLUORESCENCE (RPE ATROPHY)
- MULTIFOCAL ERG

32

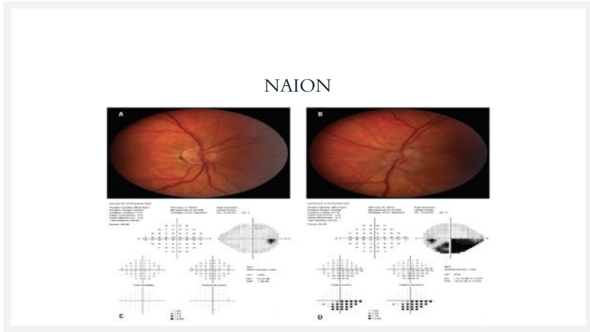
- 60 YEAR OLD MALE
- WOKE UP WITH DECREASED VISION IN THE LEFT EYE

33



34

NAION



35

DRUG INDUCED NAION

- VIAGRA
- LEVITRA
- AMIODARONE
- IMITREX
  - HYPERTENSION AND SLEEP APNEA –NOCTURAL HYPOTENION

36

GLAUCOMA

- INCREASE OUTFLOW
- DECREASE PRODUCTION

37

PROSTAGLANDINS

- LATANOPROST
- BIMATOPROST
- TRAVOPROST
- (NON BAK) PRESERVATIVE FREE OPTIONS…
- IYUZEH, ZIOPTAN,(TAFLUPROST), COSOPT PF, TIMOPTIC IN OCUDOSE
- XELPROS – CONTAINS POTASSIUM SORBATE

38

PROSTOGLANDINS

- INCREASE OUTFLOW THROUGH UVEOLSCLERAL PATHWAY
- PIGMENTATION EFFECTS
- LASH LENGTHENING
- CONJUNCTIVAL HYPEREMIA
- CAUTION IN ACTIVE INFLAMMATION (UVEITIS, CME, HERPES)

39

40

41

CARBONIC ANHYDROSE INHIBITORS

- BRINZOLAMIDE
- DORZOLAMIDE

42

CARBONIC ANHYDRASE INHIBITORS

- DECREASE AQUEOUS PRODUCTION
- BURNING, METALLIC TASTE
- SULFA ALLERGY

43

BETA BLOCKERS

- BETA 2 – LOCATED ON NPCE, ENHANCES AQUEOUS SECREATION VIA ACTIVE SECRETION – BLOCKING THIS REDUCES AQUEOUS PRODUCTION
- TIMOLOL .25% DAILY

44

BETA BLOCKERS

SIGNIFICANT RISK OF SYSTEMIC SIDE EFFECTS	CNS – MOST COMMON	CARDIOVASCULAR (SECOND MOST COMMON)
	• HEADACHES • DEPRESSION • WEAKNESS	• BRADYCARDIA • HYPOTENSION • SYNCOPE

45

BETA BLOCKERS

- RESPIRATORY
  - BRONCHOSPASM
  - CONTRAINDICATED COPD AND ASTHMA

46

Dual Outflow MOA:

- VYZULTA (LATANOPROSTENE BUNOD)
  - PROSTOGLANDIN PLUS NITRIC OXIDE – IMPROVES TM PERMEABILITY

47

Rock inhibitors

- RHOPRESSA (NETARSUDIL)
  - RHO KINASE INHIBITOR – INCREASES OUTFLOW THROUGH TRABECULAR MESHWORK
  - ROCK INHIBITORS RELAX ACTINMYSIN WITHIN TM AND INNER WALLS OF SCHLEMM'S CANAL
  - INCREASES VASODILATION WITHIN EPISCLERAL VENOUS SYSTEM
  - WHORL K
  - CONJUNCTIVAL HYPEREMIA
  - SUBCONJUNCTIVAL HEMORRHAGE

48

49

Combination:

- ROCKLATAN (NETARSUDIL AND LATANOPROST)
  - COMBO MEDICATION
  - WHORL K
  - SUBCONJUNCTIVAL HEME (WARFARIN?)
  - CONJUNCTIVAL INJECTION

50

51

DRY EYE UPDATE:
PREVENTS ADHESION, ACTIVATION, MIGRATION AND PROLIFERATION OF LYMPHOCYTES

xiidra®
(lifitegrast ophthalmic solution)5%

52

DRY EYE UPDATE:

TYRVAYA nasal spray contains varenicline which is a partial nicotinic acetylcholine receptor agonist(cholinergic agonis

- binding produces agonist activity and activates the trigeminal parasympathetic pathway resulting inincreased production of basal tear film

53

54

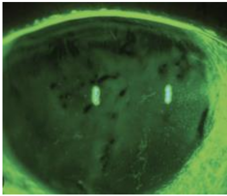
FIRST FOR EVAPORATIVE DRY EYE

55

MIEBO MOA

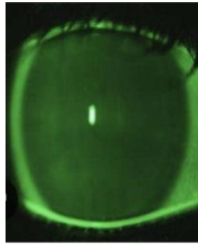
- NOT CLEAR BUT THOUGHT TO WORK BY MIMICKING THE ANTI-EVAPORATIVE PROPERTIES OF MEIBUM
- SPREADS UNIFORMLY OVER THE OCULAR SURFACE FORMING A PROTECTICE SURFACTANT LAYER OVER THE TEAR FILM WHICH PREVENTS EVAPORATION
- QID DOSAGE, 3ML BOTTLE
- MILDLY DECREASED VA
- NO BURNING

56



BEFORE MIEBO:

57



10 MINUTES AFTER MIEBO

58

IS IT REALLY DRY EYE?

- Decreased corneal sensation
- Non healing epithelial defect
- Stain without pain
- Ulceration

59

NEUROTROPHIC RISK FACTORS:

- DIABETES
- HERPES SIMPLEX
- HERPES ZOSTER
- LASIK
- CONTACT LENS WEAR

60

61

OXERVATE

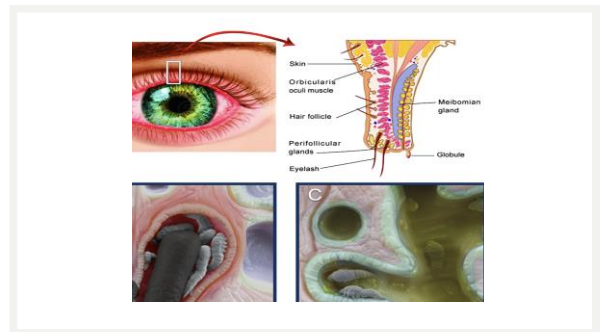
- FIRST TOPICAL BIOLOGIC MEDICATION
- HUMAN NERVE GROWTH FACTOR
- POTENTIAL TO COMPLETELY HEAL NEUROTROPHIC KERATITIS
- Q2H X 8 WEEKS

62

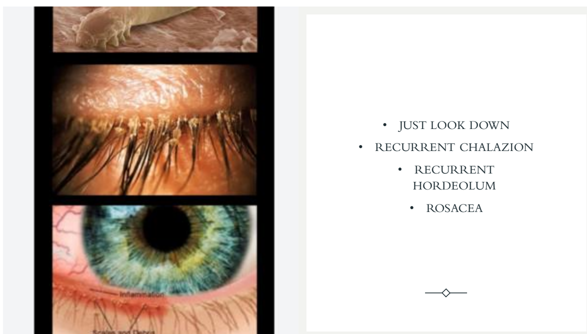
BLEPHARITIS

- ITCHING
- DISCHARGE
- BURNING
- MGD
- COLLARETTES

63



64



65

66

XDEMVY

- XDEMVY (LOTILANER) IS AN ANTIPARASITIC AGENNT APPROVED FOR DEMODEX BLEPHARITIS
- PARALYZES AND ERADICATES MITES – SELECTIVELY INHIBITS PARASITE SPECIFIC Y-AMINOBUTYRIC ACID CHLORIDE CHANNELS
- 1 DROP BID X 6-12 WEEKS
- REPEATABLE?

67

THANK YOU!

QUESTIONS?
DRMARIA@OCULARPRIME.CO
M

68

Anterior Segment Disease for Primary Care Optometry

Maria Pribis, OD, FAAO
Ocularprime.blog
drmaria@ocularprime.com

1

Course Objectives:

- Review ocular conditions that present with a red eye
- Review how to diagnose common conditions that make the eye red
- Review how to treat common conditions that present with a red eye
- Review when lab work or referral is warranted for a red eye

2

"As to diseases make a habit of two things - to help, or at least, to do no harm."

–Hippocrates

3

Why is my eye red?

- How many patients per day ask us this?
- Can be acute or chronic
- Can be painful or painless
- Cosmetically upsetting

4

Anatomy Review

- Cornea
- Conjunctiva
- Anterior chamber and angle

5

Cornea

- Transmits and refracts light (2/3 power)
- Protective barrier
- Average thickness = 550um

6

Corneal Layers: Epithelium

- Consists of non-keratinized epithelium
- Surface layer
- Wing cells
- Basal layer - only mitotic layer
- Stem cells - from Palisades of Vogt which become basal cells which produce wing cells that migrate anteriorly to become surface layer of epithelium

7

Corneal Layers: Bowman's Layer

- Type 1 collagen
- Transition layer from epithelium to stroma
- If damaged will scar

8

Corneal Layers: Stroma

- 20% connective tissue and 80% water
- Anterior 1/3 has higher cross linking creating more rigidity
- Posterior 2/3 is more organized and uniformed with less cross linking

9

Corneal Layers: Descemet's Membrane

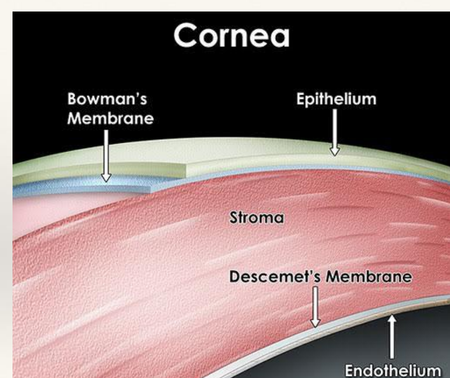
- Basement membrane produced by corneal endothelium
- Very resistant to trauma

10

Corneal Layers: Endothelium

- 5um thick single layer of squamous cells
- Contains Na+/K+ ATP pumps to maintain a clear cornea
- Do not replicate
- 1500-2000 is normal endothelial cell count for adult

11



12

Conjunctiva

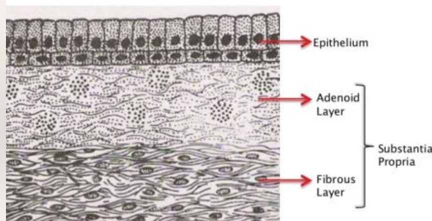
- Translucent membrane that extends from the limbus through the fornices into eyelids
- Protects soft tissues of eyelid and orbit
- Allows movement of the eye
- Antimicrobial source
- Produces mucin layer of tears

13

Conjunctival Layers

- Non-keratinized epithelial layer
- Submucosa

14



15

Palpebral Conjunctiva

- Lines eyelid margins
- Lines tarsal plate

16

Bulbar Conjunctiva

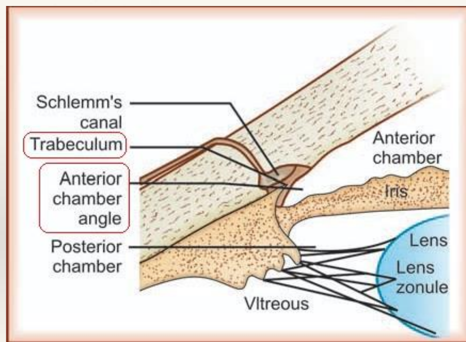
- Translucent membrane that covers the sclera
- Limbus - source of stem cells that migrate to basal layer of cornea
- Plica Semiluminaris - provides slack for lateral movement
- Caruncle - source for collection of debris

17

Anterior Chamber and Angle

- 3.6mm in depth
- 250uL of fluid
- Angle structures: Iris—> Ciliary Body—> Scleral spur—> Trabecular meshwork—> Schlemm's canal —> Schwalbe's line

18

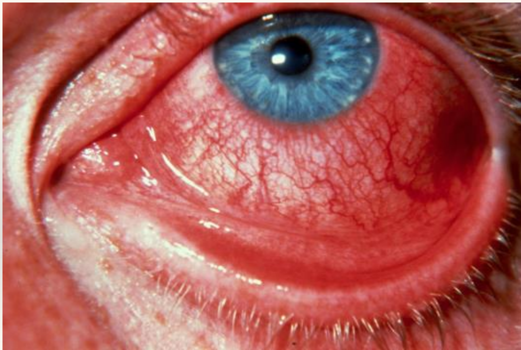


19

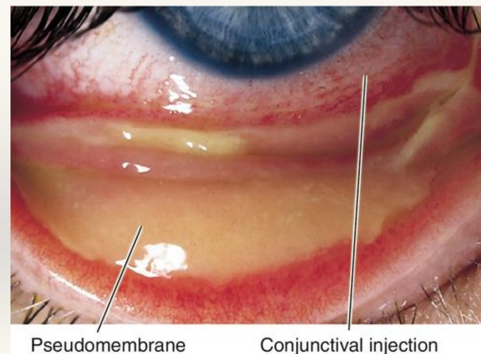
Case 1:

- 43 year old male
- CC: for the last few days my eyes have been red, some tearing, also not feeling well, started in my right eye than went to my left eye
- BCVA: OD: 20/20 OS: 20/25
- IOP: OD: 16mmHg OS: 17mmHg
- +PAN

20

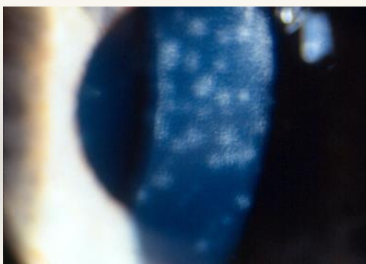


21



22

1 Week Follow Up



23

Diagnosis: EKC

- Corneal involvement
- +PAN
- Pseudomembranes
- Adenoviral conjunctivitis serotype 8, 19 and 37

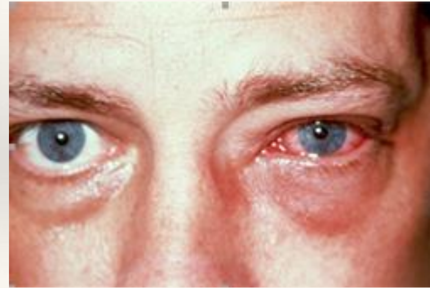
24

Differential Diagnosis

- Acute nonspecific follicular conjunctivitis - diffuse red eye, follicles, corneal involvement is rare
- Pharyngeal Conjunctival Fever - swimming pool conjunctivitis (fever, sore throat, follicular conjunctivitis), corneal involvement is rare
- Check for +PAN = EKC

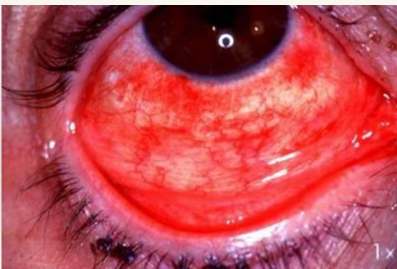
25

Acute nonspecific follicular conjunctivitis



26

PCF



27

Viral Conjunctivitis

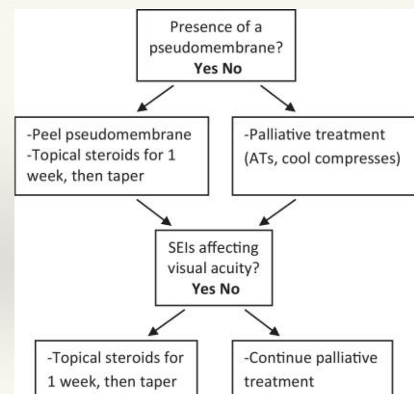
- More common in adults than children
- Typically from upper respiratory infections
- 1/3 of adenoviral serotypes are associated with ocular infections
- Transmission via direct contact
- Contagious 10-12 days

28

Treatment

- Self limited and resolves within 2-3 weeks
- Frequent hand washing
- Preservative free artificial tears
- Cool compresses
- Anti-histamine if itching
- Peel membranes with forceps
- Steroids if SEI's present
- Do not give topical antibiotics

29

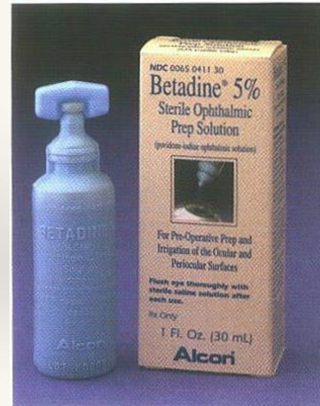


30

Betadine Protocol

- Instill topical anesthetic
- Instill 3 drops of betadine
- Leave in eye for 1 minute
- Rinse well
- Rx soft steroid with topical NSAID
- Best if within 48 hours of symptoms onset

31



32

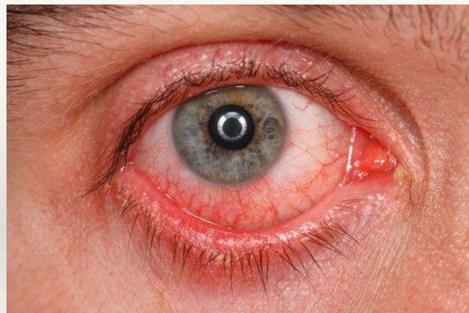
33

34

Case 2:

- 16 year old female
- CC: My eyes are very itchy, some white discharge at times, can't stop rubbing my eyes, pretty much year round
- BCVA: OD: 20/20 OS: 20/20
- IOP: OD: 11mmHg OS: 11mmHg

35



36

Diagnosis: Atopic keratoconjunctivitis

- Most common teens to 40's
- History of atopic conditions especially dermatitis
- Small papillae inferior palpebral conjunctiva
- Thickened lid margins sometimes eczema
- Not seasonal; type 1 and 4 hypersensitivity reaction

37

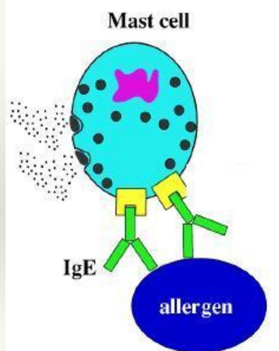
I = Allergic Anaphylaxis and Atopy

II = antiBody

III = immune Complex

IV = Delayed

38



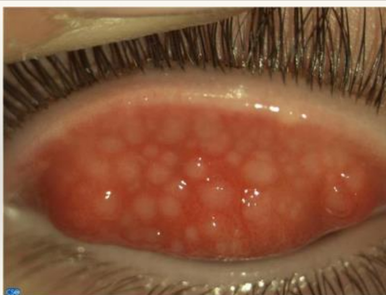
39

Differential Diagnosis

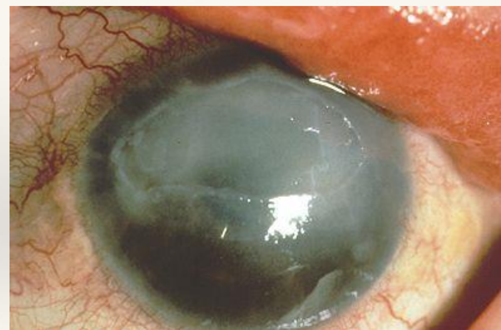
- Allergic conjunctivitis - seasonal and perennial (dust mites, animal dander)
- Vernal keratoconjunctivitis - rare, young males under age 10 (resolves around puberty) typically have asthma or eczema
- Giant papillary conjunctivitis - contact lens wearer, inflammatory disorder with mechanical trauma and an immune response to contact lens surface deposits or environmental factors

40

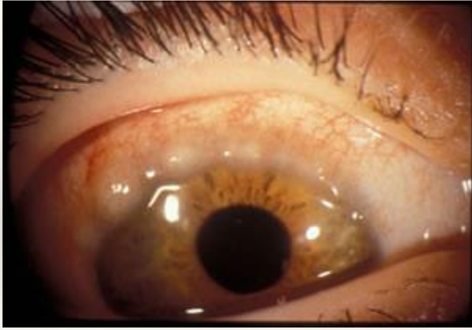
VKC



41

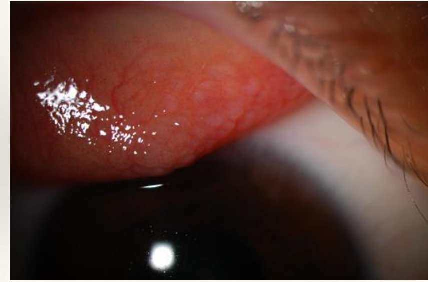


42



43

GPC



44

Treatment

- Eliminate inciting agent
- Cool compresses
- Artificial tears
- Anti-histamine - BEZLOP
- Soft steroids
- Oral anti-histamine (Benadryl or Zyrtec)

45

VKC/AKC Treatment

- Similar to above except prophylactic use of a mast cell stabilizer or combination mast cell/anti-histamine (BEZLOP)
- If shield ulcer - topical antibiotic qid, cycloplegic, topical steroid qid plus anti-histamine drops if not already using, ulcer may need to be scraped for re-epithelialization
- Topical cyclosporine bid if not responding to above
- Atopic dermatitis of eyelids - tacrolimus .03% bid or topical steroid ointment (loteprednol)

46

Follow Up

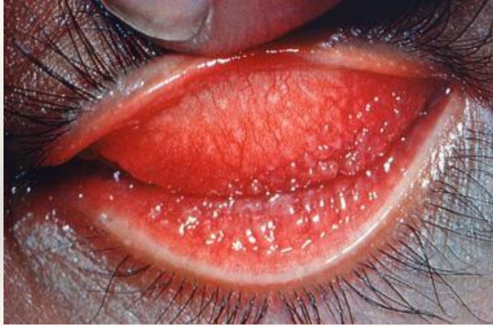
- If shield ulcer follow up every 1-3 days otherwise in 1-2 weeks

47

Case 3:

- 21 year old male
- CC: My left eye has been red for a few months, not painful
- BCVA: OD: 20/20 OS: 20/20
- IOP: OD: 15mmHg OS: 14mmHg

48



49

Diagnosis: Chlamydial - Adult Inclusion Conjunctivitis

- Sexually active young adults, most common bacterial STD (54% males and 74% females will have active genital infection – discharge)
- Chronic red eye 3-12 months if untreated
- Very large follicles inferior palpebral conjunctiva
- Serotype D-K, spread via genital-hand-eye transmission
- Ocular symptoms typically 5-14 days after contact

50

Treatment of Chlamydial Conjunctivitis

- Azithromycin 1g po single dose
- Doxycycline 100mg po bid for 1 week (sometimes necessary to take for up to 6 weeks
- Topical erythromycin ointment bid x 2-3 weeks

51

Follow Up: Chlamydial Conjunctivitis

- In 2-3 weeks depending on severity
- Sexual partners should be examined and treated by medical doctor for other STD's

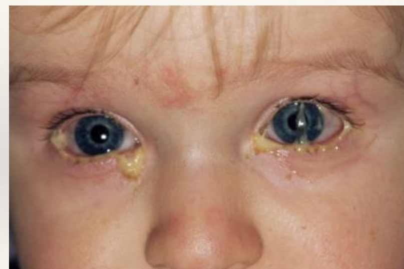
52

Differential Diagnosis

- Simple Bacterial Conjunctivitis - more common in children, acute onset one eye than the other eye involved, resolves within 2 weeks even without treatment
- Gonococcal Conjunctivitis - STD in young adults or infants born vaginally to infected mother, hyperacute onset of purulent discharge

53

Simple Bacterial Conjunctivitis



54

Treatment of Simple Bacterial Conjunctivitis

- Topical antibiotic (polytrim or fluoroquinolone drops qid for 5-7 days — do not give levofloxacin all other topical fluoroquinolones safe at age 1)

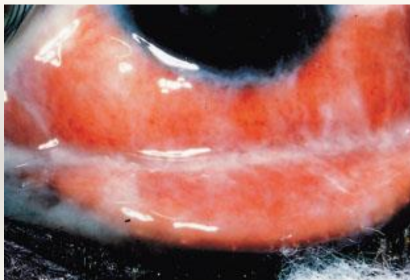
55

Follow Up: Simple Bacterial Conjunctivitis

- 1-2 days till improvement seen then once a week until resolves

56

Gonococcal Conjunctivitis



57

Treatment of Gonococcal Conjunctivitis

- Ceftriaxone 1 g intramuscular in single dose
- If corneal involvement hospitalize and give IV ceftriaxone
- If PCN allergy give ciprofloxacin 500mg po for 5 days
- Oral fluoroquinolones are CI in pregnant women
- Topical antibiotic q2h every 1 hour if cornea involved (4th generation fluoroquinolone)
- Saline irrigation for discharge
- Treat for likely chlamydia

58

Follow Up: Gonococcal Conjunctivitis

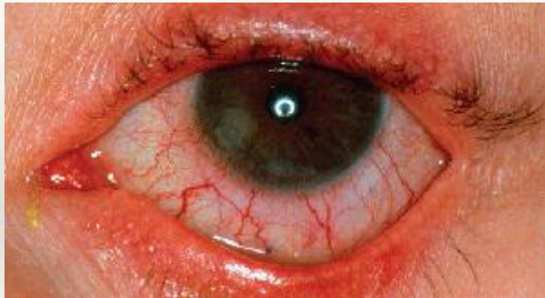
- Daily until improvement noted
- Every 2-3 days until resolves
- Sexual partners should be examined and treated by medical doctor for other STD's

59

Case 4:

- 49 year old female
- CC: for the last few days my eyes have been red, some tearing, itchy, stuck together in the morning
- BCVA: OD: 20/20 OS: 20/20
- IOP: OD: 14mmHg OS: 13mmHg

60

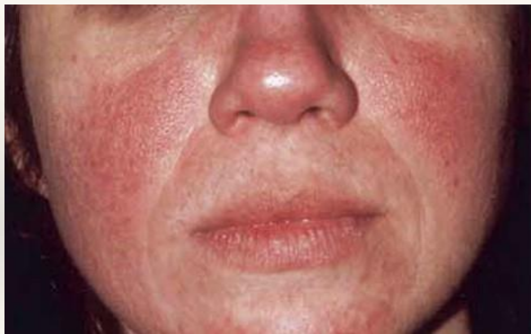


61

Diagnosis: Blepharoconjunctivitis

- Crusty, red, thickened eyelid margins
- Telangiectasia along lid margins
- Inspissated oil glands
- Swollen eyelids
- Associated with rosacea

62



63

Differential Diagnosis

- Pediculosis - will see lice along lashes
- Demodex – collarettes (sleeving along lashes)
- Acute Conjunctivitis - no evidence of eyelid inflammation

64

Treatment

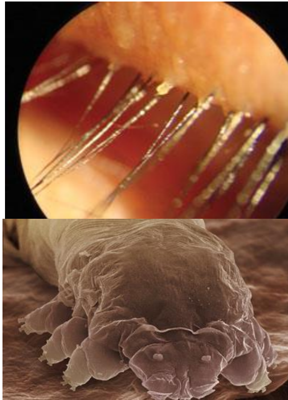
- Lid scrubs twice a day
- Warm compresses twice a day
- Combination antibiotic/steroid qid x 1 week
- If recurrent consider oral doxycycline 100mg po daily for a few weeks (can split 50mg BID x 4-6 weeks)
- In office IPL vs Tearcare

65

Follow Up

- 3-4 weeks
- Lid hygiene should be continued long term
- Oral omega 3 supplements can be considered for evaporative dry eye (DREAM study omega 3 equal to placebo (olive oil) in improving dry eye
- Topical cyclosporine or topical lifitegrast bid if long term therapy needed

66



67

Treatment: Demodex

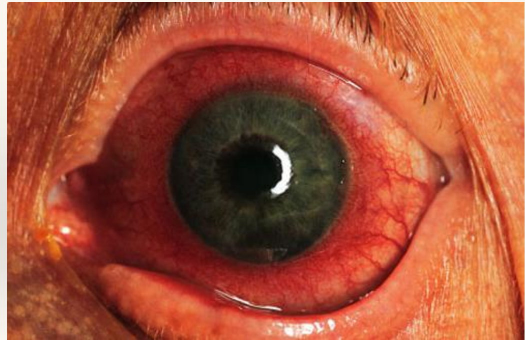
- Debridement of lashes
- Combination antibiotic/steroid qid x 1 week
- 1-2 months of miticidal lid scrub like cliradex/zocular
- Xdemvy bid OU x 6 weeks

68

Case 5:

- 38 year old male
- CC: for the last few days my eyes have been red, very light sensitive, painful
- BCVA: OD: 20/20 OS: 20/20
- IOP: OD: 9mmHg OS: 10mmHg
- ROS positive for lower back pain

69

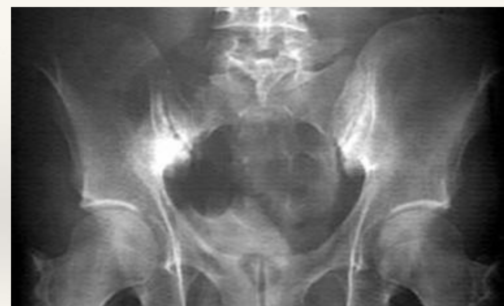


70

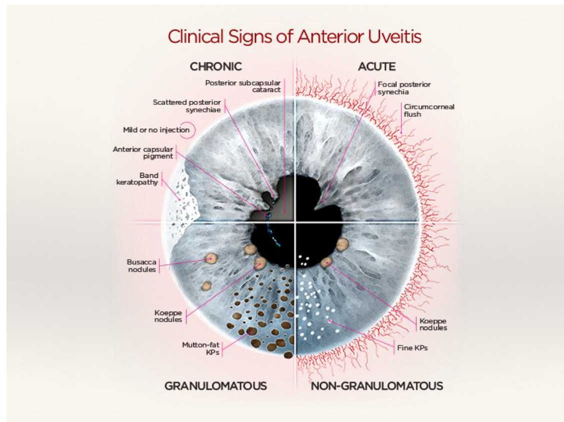
Diagnosis: Anterior Uveitis

- 20-40 year olds typically if >70 suspect herpes zoster
- Secondary to a breakdown of the blood aqueous barrier
- 50% of acute non-granulomatous anterior uveitis are HLA-B27 and associated with an associated spondyloarthropathy
- UCRAP - ulcerative colitis, Crohn's disease, reactive arthritis, ankylosing spondylitis and psoriatic arthritis

71



72



73

Granulomatous vs Non-Granulomatous

- Sarcoidosis vs Tuberculosis vs Syphilis
- UCRAP - ulcerative colitis, Crohn's disease, reactive arthritis, ankylosing spondylitis and psoriatic arthritis

74

Differential Diagnosis

- Posterior uveitis with spillover into anterior chamber
- Traumatic iritis
- Posner-Schlossman syndrome - recurrent episodes of high IOP with AC reaction
- Drug induced - rifabutin, cidofovir, sulfonamides
- Scleraluveitis - presents with SEVERE pain
- Infectious endophthalmitis - recent surgery

75

Work Up

- History and review of systems
- Complete ophthalmic exam including dilated fundus exam
- Lab work: RPR, FTA-ABS, PPD, chest X-ray, ACE, Lyme, ESR, HLA-B27

76

Treatment

- Cycloplegic bid
- Topical steroid (predict forte q1h durezol qid)
- IOP lowering agent if increased IOP or steroid response (avoid prostaglandins and miotics)
- Systemic management if diagnosis found

77

Follow Up

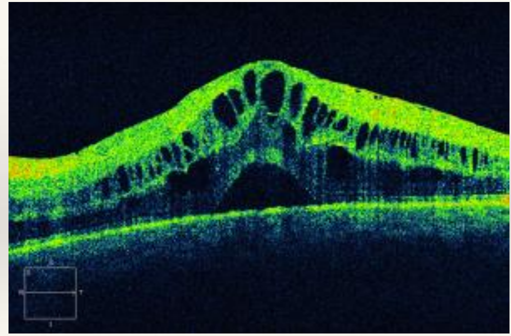
- Every 1-7 days in acute phase
- Every 1-6 months once stable
- Need slow steroid taper
- Dilated exam for all flare ups, decreased vision or every 3-6 months

78

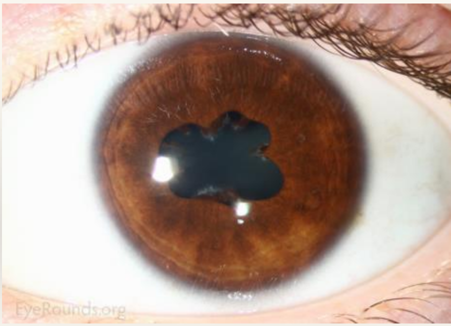
Threats to Vision

- Cystoid macular edema
- Posterior or peripheral anterior synechiae

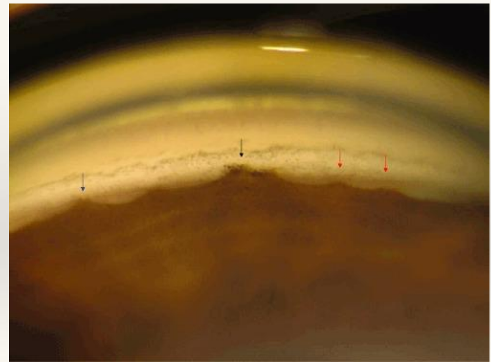
79



80



81



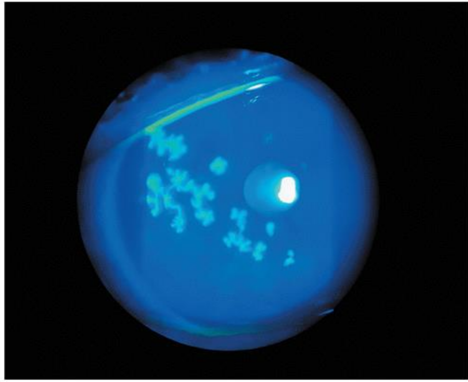
82

83

Case 6:

- 42 year old female
- CC: my right eye became red and blurry about two days ago
- BCVA: OD: 20/40 OS: 20/20
- IOP: OD: 13mmHg OS: 14mmHg
- History of cold sores

84

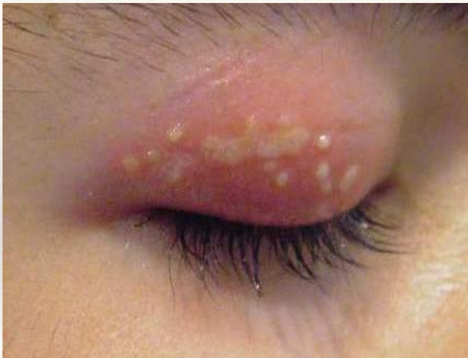


85

Diagnosis: Herpes Simplex Keratitis

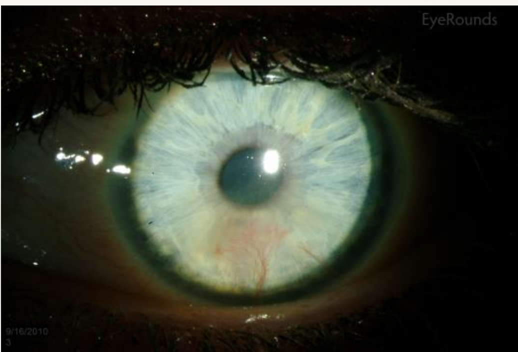
- Primary infection is usually not apparent clinically
- Triggers: fever, stress, trauma, UV exposure
- Eyelid involvement = clear vesicles on lid
- Conjunctivitis = unilateral follicles, conjunctival dendrites
- Cornea = epithelial vs stromal
- Neurotrophic = sterile ulcer with smooth epithelial margins over stromal disease that progresses even with anti-virals
- Uveitis = granulomatous uveitis

86

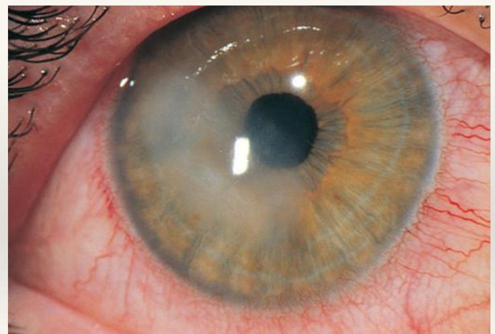


87

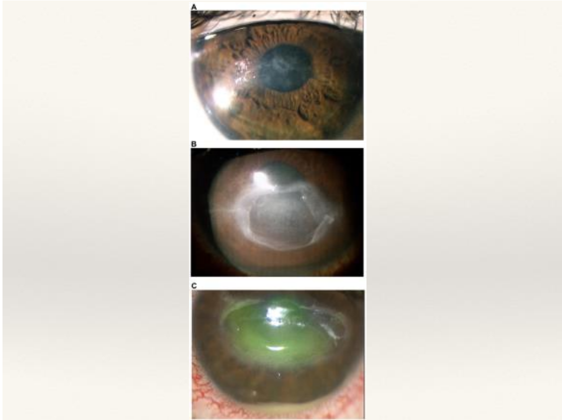
88



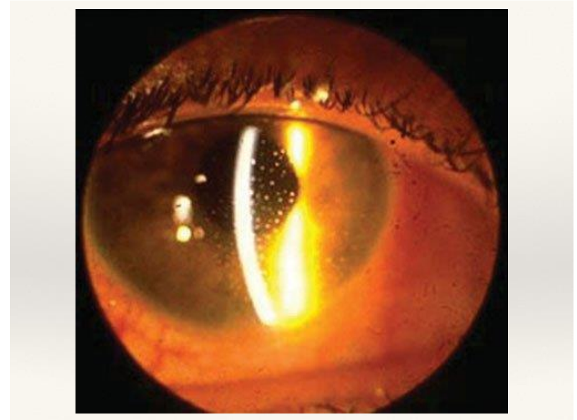
89



90



91



92

Differential Diagnosis

- Herpes zoster = will have painful skin vesicles
- Recurrent erosion
- Acanthamoeba keratitis = soft contact lens wear, pain out of proportion

93

Treatment

- Epithelial disease = antiviral therapy (zirgan 5 times per day until resolves than tid x 1 week/ viroptic 9 times per day than 5 times for 1 week)
- Stromal disease = antiviral plus topical steroids (cycloplegic if AC reaction)
- Prophylaxis = acyclovir 400mg bid vs valcyclovir 1000mg daily - HEDS

94

Follow Up

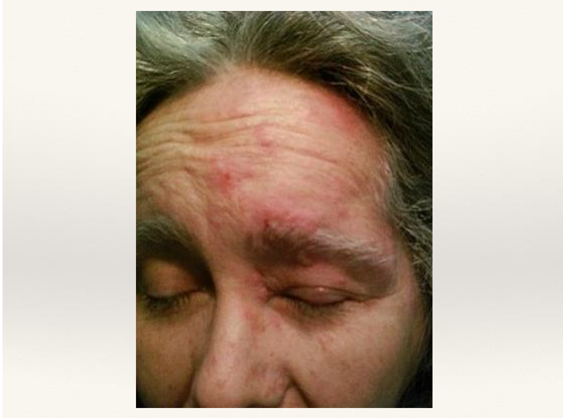
- Daily until improvement shown then every few days

95

Case 7:

- 75 year old female
- CC: my left eye became red and I have a rash on my face, tingling
- BCVA: OD: 20/25 OS: 20/25
- IOP: OD: 15mmHg
- History of cataract surgery

96

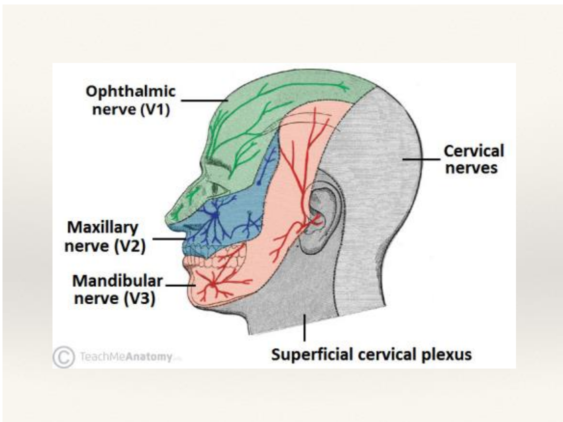


97

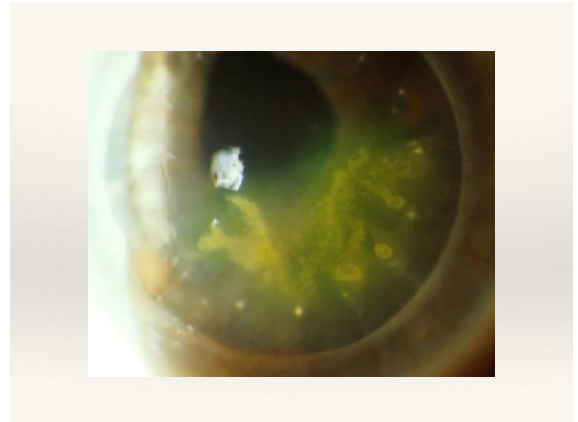
Diagnosis: Herpes Zoster Opthalmicus

- Vesicular rash along cranial nerve V1
- Does not involve lower eyelid
- Hutchinson sign
- Corneal pseudodendrites
- Immune stromal keratitis
- Granulomatous uveitis
- Neurotrophic keratitis = uncommon
- Increased IOP = trabeculitis

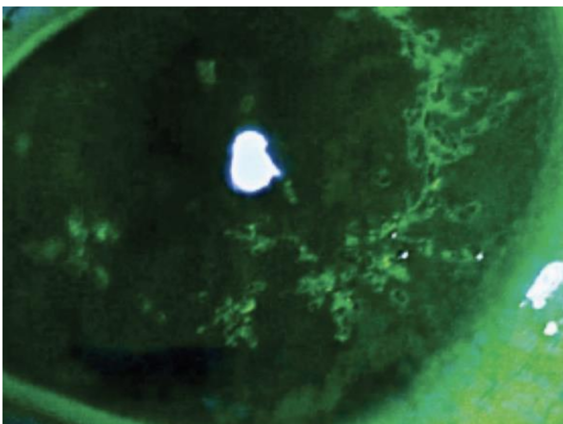
98



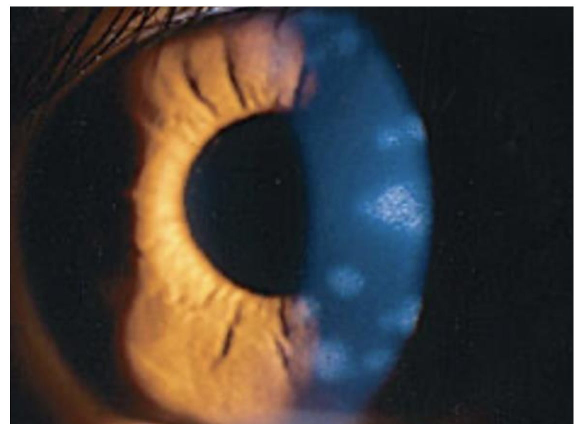
99



100



101



102

Treatment

- Valtrex 1000mg po TID x 1 week or acyclovir 800mg 5 times a day x 1 week
- Conjunctival involvement = cool compresses, antibiotic ointment bid
- Corneal involvement = PF artificial tears q2h, ointment qhs
- Stromal keratitis = topical steroid qid with very slow taper (months to years)
- Uveitis = topical steroid qid, cycloplegic
- Increased IOP = topical steroid qid and IOP lowering agents except prostaglandins

103

Follow Up

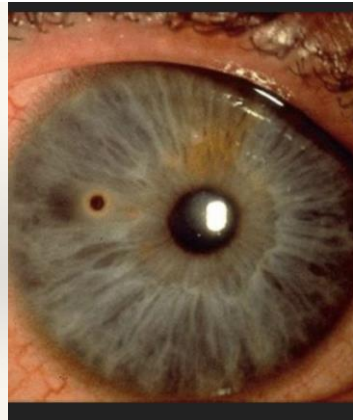
- 1-7 days depending on severity
- Once acute condition resolves every 3-6 months

104

Case 8:

- 25 year old male
- CC: my right eye became red and painful after grinding metal at work yesterday
- BCVA: OD: 20/30 OS: 20/20
- IOP: OD: 15mmHg

105



106

Diagnosis: Metallic corneal foreign body

- No ulcer present (must rule out infectious ulcer)

107

Treatment

- Remove corneal foreign body using a spud or 25-27 gauge needle
- Remove rust ring if present with Alger brush
- 1 got moxifloxacin QID x 7 days

108

Follow Up

- 1-3 days, if corneal edema present at follow up add prednisolone acetate 1% BID (continue moxifloxacin until epithelial defect resolves
- Review importance of safety glasses to prevent future corneal/conjunctival foreign body

109

Thank You!

- Any Questions?
- Contact me at DrMaria@ocularprime.com
- @ocularprime and @DrMariaCT on Twitter/instagram

110