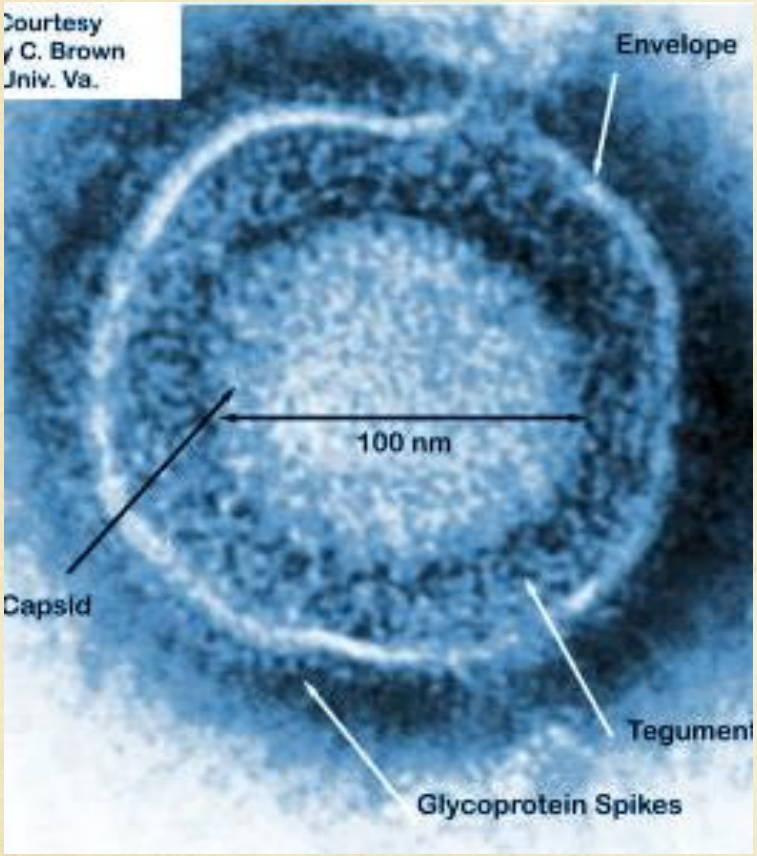
# Herpetic Eye Disease

Jason Duncan, OD, FAAO
Diplomate, American Board of Optometry
Associate Professor, Southern College of Optometry

# I have what?!

- How to break the news…

# Meet the Herpes




- Quick virology review
  - Nuclear replicating, icosahedral, enveloped double stranded DNA viruses
  - Virus replicates at initial site of infection
  - Virus then travels axonally to the sensory nerve ganglion that enervates the site of infection
  - Once in the sensory ganglion, there is a profound restriction of viral gene expression
  - Reactivation

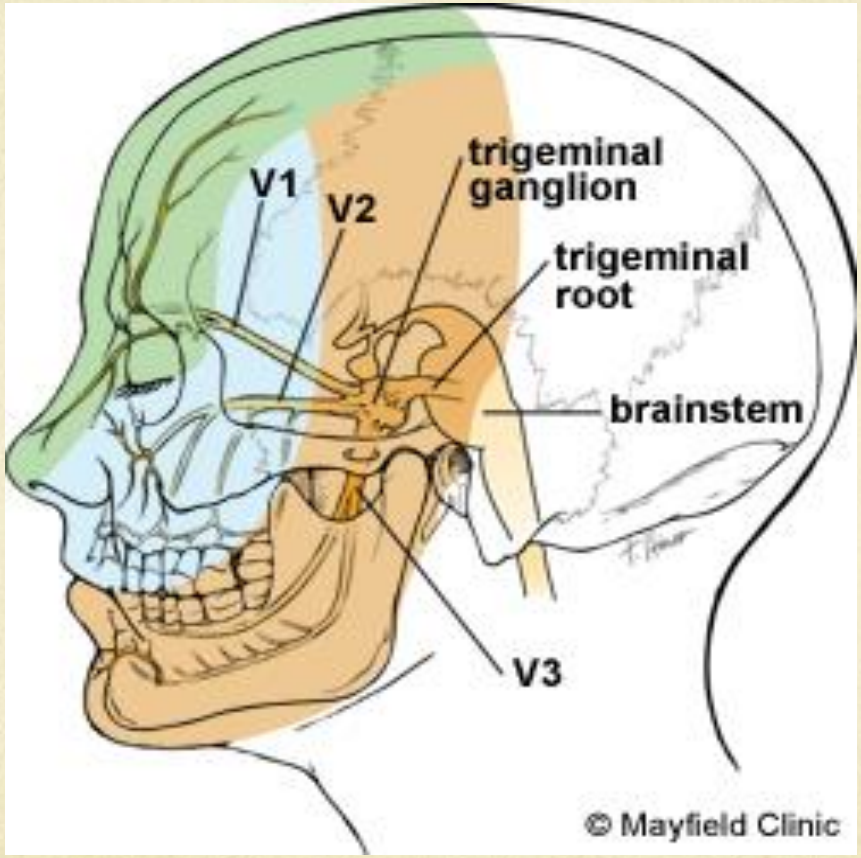
# As Easy as 1, 2, V

- Quick herpes epidemiology review
  - Almost 100% of persons over 60 have been found to harbor HSV
  - HSV is the most common corneal infection in the US
  - Can have primary ocular HSV infections in children
  - More commonly, we see secondary infections from a reactivation in adults
  - 8 herpetic viruses affect humans
  - Estimated 500K HSV related ocular disease cases in US
    - ~20K new cases and 28K reactivations each year
  - Recurrence rate in the ballpark of 30%

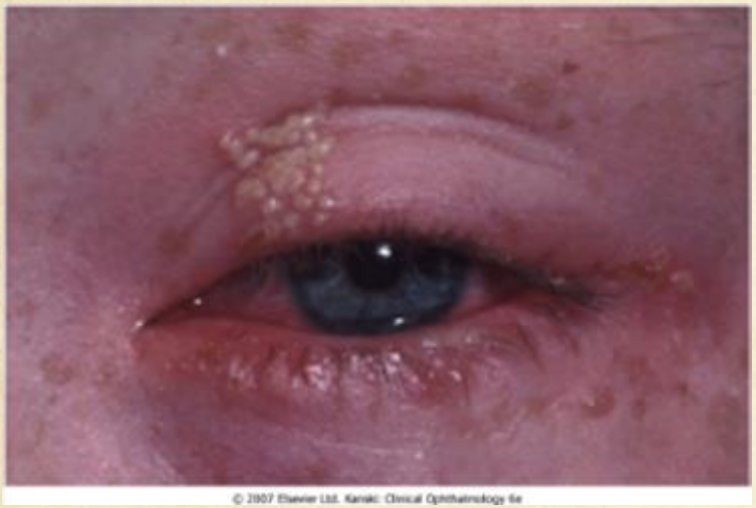
# Reactivation Triggers

- Stress
- Immunosuppression
- UV exposure
- Fever
- Trauma
- Menses
- Eye drops

# CN 5

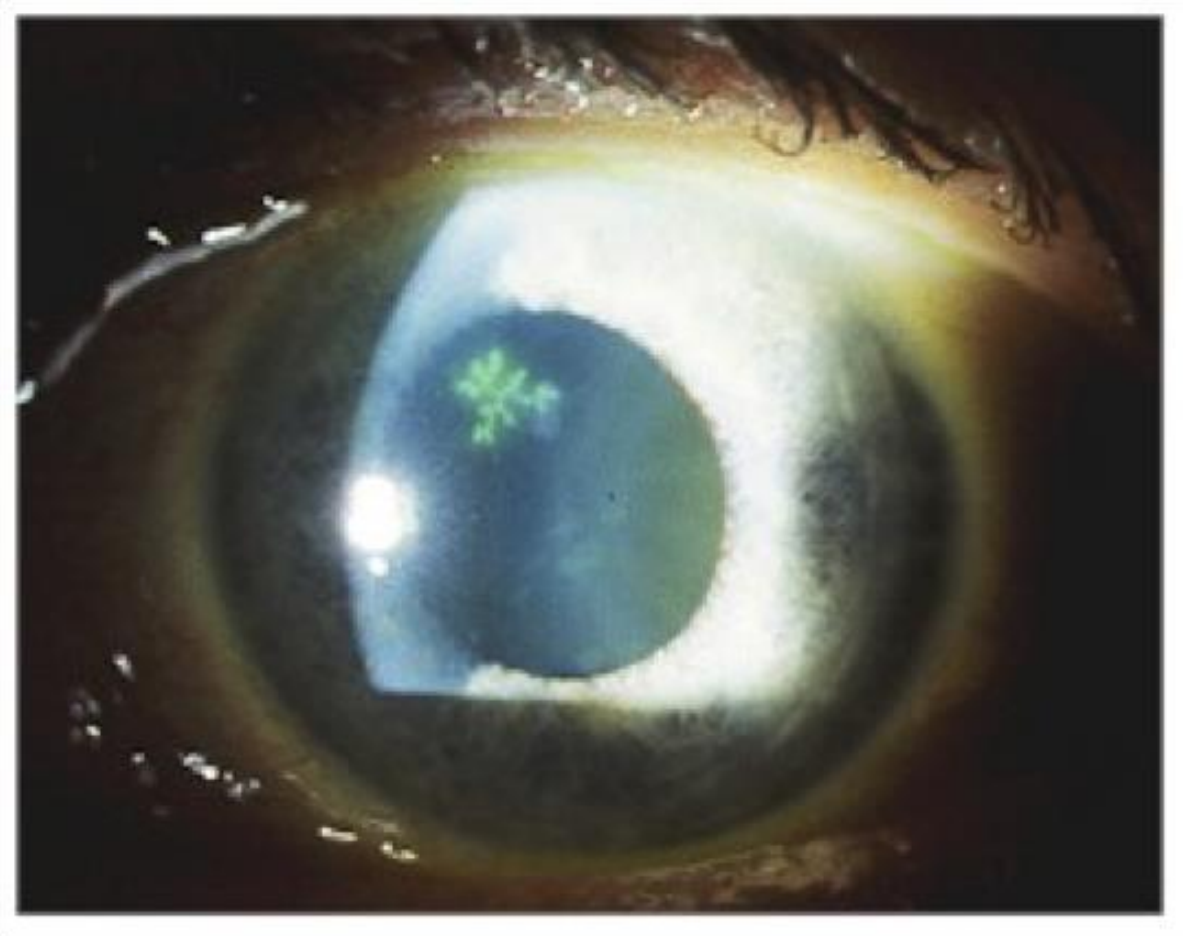

V1
V2
trigeminal ganglion
trigeminal root
brainstem
V3
© Mayfield Clinic

# Primary Infection

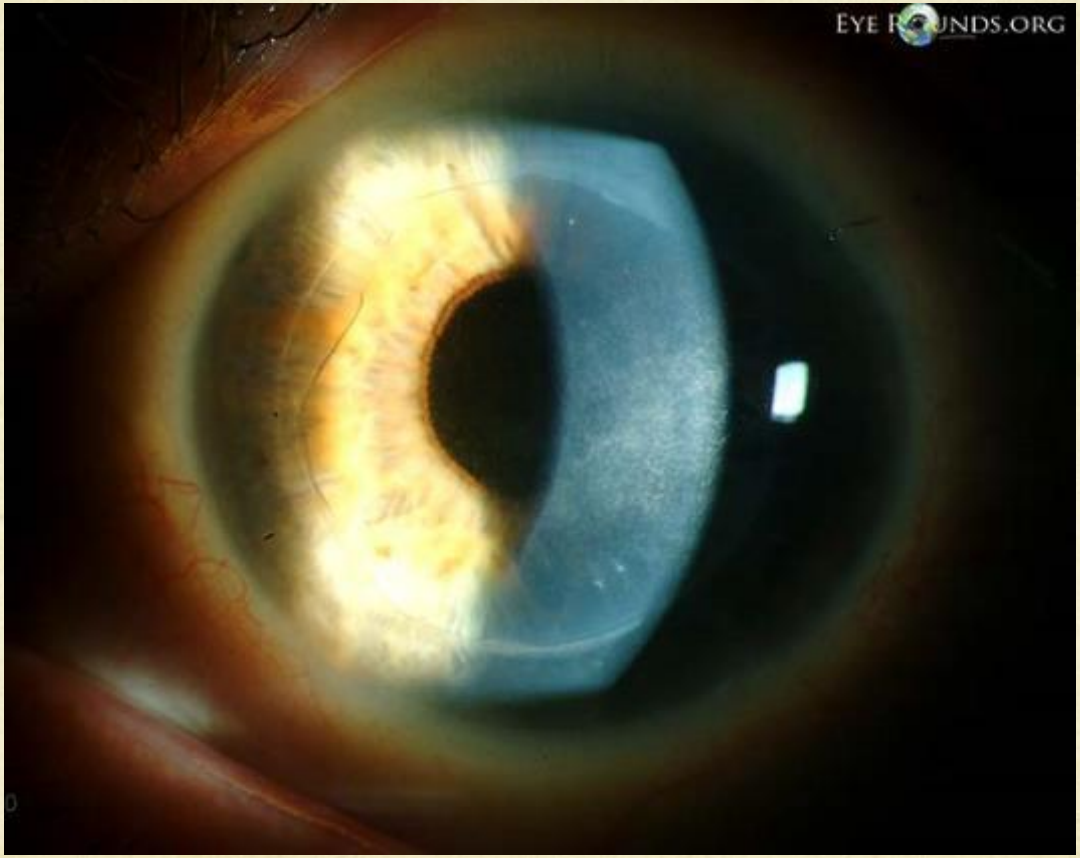


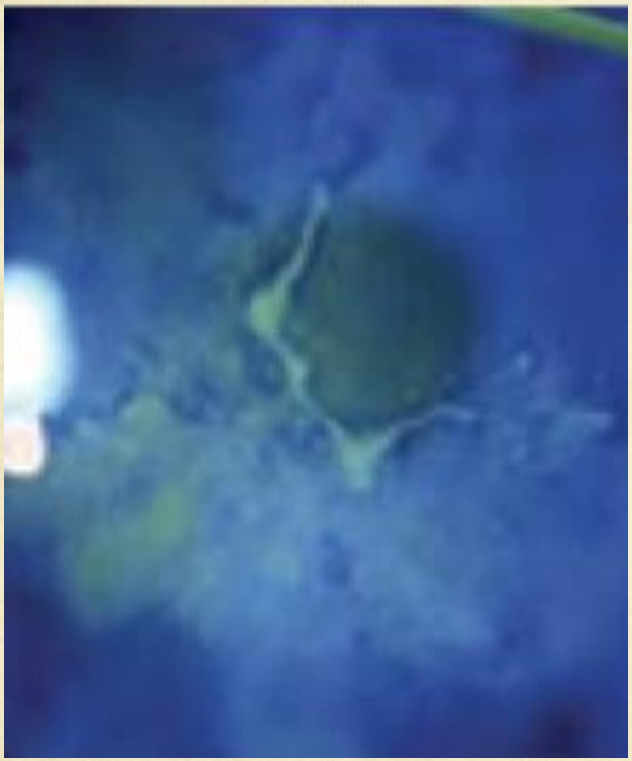

- Pustules
- Vesicles
- Edema
- Ulceration
- Conjunctivitis

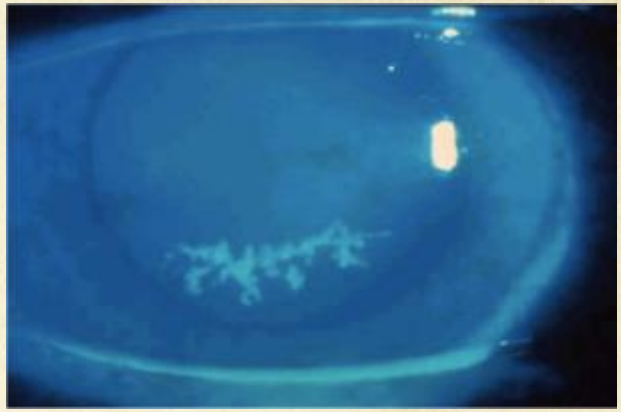
# Classic Dendritic Appearance

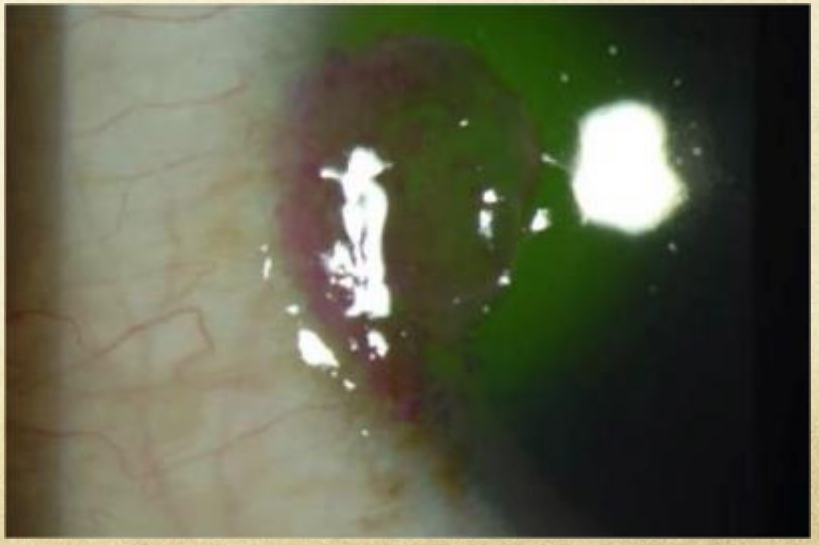


# Footprints



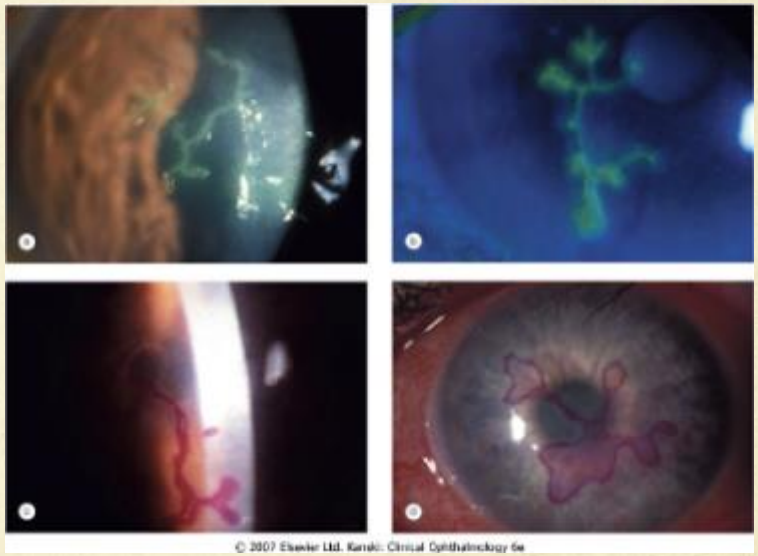




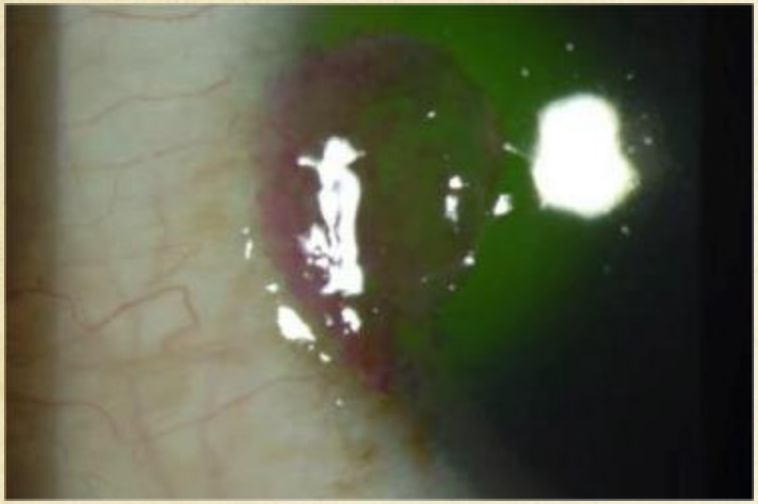


# HSVeK

- HSV reactivation that involves only the corneal epithelium
  - May be plaque – like, dendritic, or geographic
  - Look for footprints
  - May have mild AC involvement
  - HSV self limits in immunocompetent individuals



# HSVeK Management



- Topical
  - Viroptic™
  - Zirgan™
  - ? Antibiotic
  - ? Cyclo
- Oral
  - Acyclovir
  - Valtrex™
  - Famvir™
- Prophylaxis?

# HSVeK Management

- Topical
  - Viroptic™ (trifluoridine 1%)
    - Q2h while awake x 1wk
    - Reduce to qid x 1 wk
    - Alternate hours with non – preserved tears
  - Zirgan™ (ganciclovir gel 0.15%)
    - Q3h until healing
    - Reduce to tid x 1wk
  - Cycloplegia
    - I prefer one application in office at initial visit unless there is an AC reaction present
  - ? Add antibiotic
    - Immunological reactions

# HSVeK Management

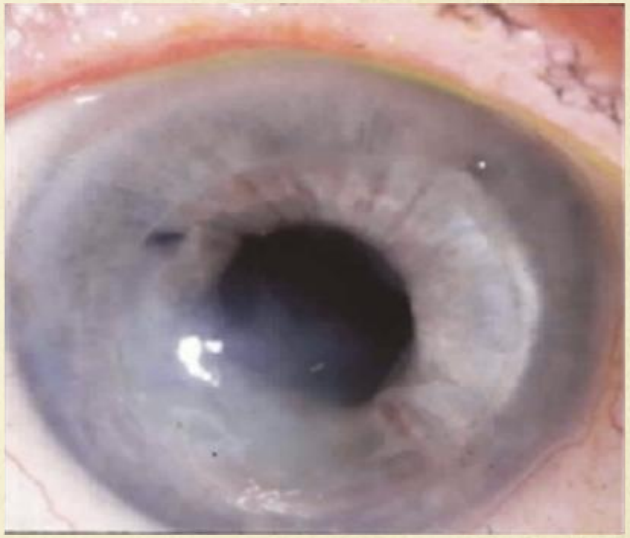
- Oral
  - Acyclovir
    - 400mg 5x/d x 21 d
    - 800mg tid
  - Valacyclovir (Valtrex)
    - 1g tid x 21 d
  - Famcyclovir (Famvir)
    - 500mg tid
  - ? Add topical antibiotic

# HSVeK FAQ

- Can the STD version infect the eyes?
  - "Can I pass this to my significant other?"
- Can it be HSV if both eyes are affected?
- What about debridement?
- What happens if I put Tobradex™ on it?

# HSVsK

- HSV affecting the corneal stroma
  - Can be associated with epithelial keratitis or be the initial presentation
  - Majority of cases are immune mediated
    - Stromal infiltrate with intact epithelium (IK)
  - NOT self limited
  - Must watch for necrotizing interstitial keratitis (NIK)
    - Epi and stromal defect, progressive necrosis, associated with live virus replication in the stroma



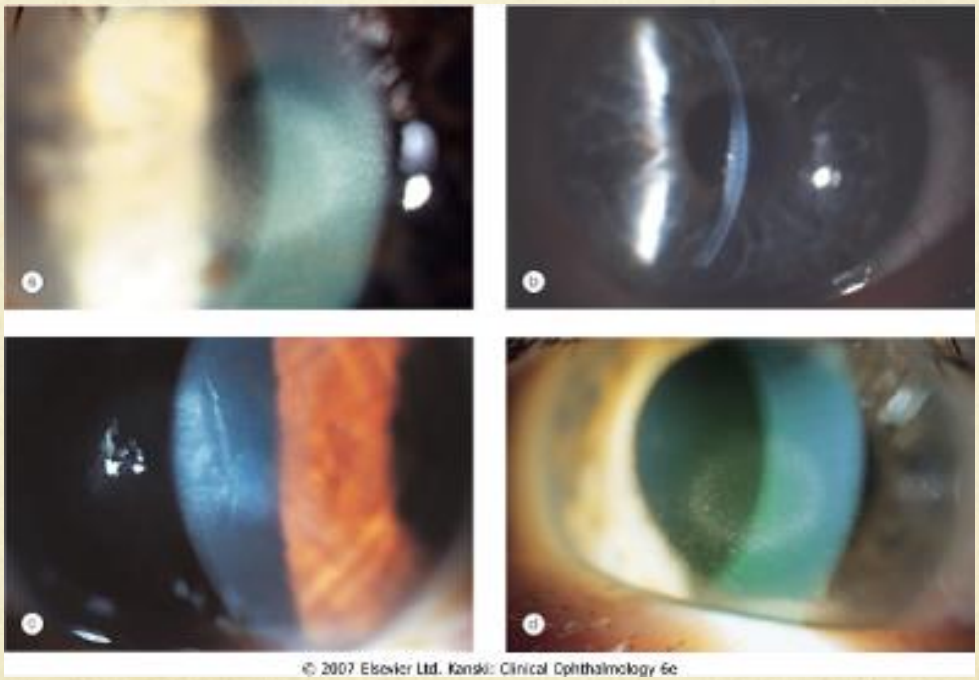
# HSVsK Management

- Topical steroids
  - EXTREMELY slow taper
- ? Topical antibiotic
- Systemic antiviral
  - ? Continue for prophylaxis
    - Acyclovir 400mg bid x 12 mo
    - Valacyclovir 500mg qd x 12 mo if uncomplicated
    - The above x 24 mo to indefinite if complicated
- The most common mistake in managing HSVsK.....?

# HSVdK

- A cell mediated immune reaction to the corneal endothelium
  - Diffuse stromal edema
  - Usually central
  - May see KP's or microcystic epithelial edema

# HSVsK



# HSVdK Management

- Topical steroids
  - Pulse dose
- Full systemic therapy if epithelial disease is present
  - Most are doing full systemic therapy regardless
- VERY slooooowwww taper of the steroids

# University of Iowa Ophthalmology

- If no IOP issues:
- Prednisolone acetate 1.0%: initiate at full dose and gradually decrease to daily dose
- Prednisolone acetate 0.125%: begin at four times daily and gradually decrease to daily dose
- Prednisolone acetate 0.125%: every other day, then twice weekly, then once weekly

# University of Iowa Ophthalmology

- If IOP issues:
- Rimexolone 1.0% (Vexol): initiate at full dose and gradually decrease to daily dose
- Loteprednol etabonate 0.5% (Lotemax): once daily
- Loteprednol etabonate 0.2% (Alrex) or fluoromethalone 0.25% (FML Forte): once daily
- Fluoromethalone 0.10% (FML); daily, then every other day, then twice weekly, then once weekly

# University of Iowa Ophthalmology

- HSV epithelial keratitis
  - Initial episode = no prophylactic therapy
  - One or more recurrent episodes = oral therapy x 1 year
- HSV stromal keratitis
  - Initial episode (uncomplicated) = oral therapy x 1 year
  - Initial episode (complicated) = oral therapy x 2 years
  - Chronic disease = oral therapy (2 years to indefinite)

# University of Iowa Ophthalmology

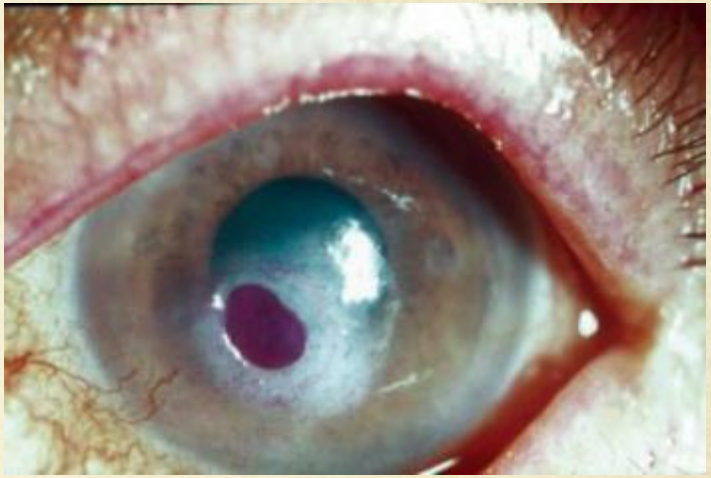
- HSV endothelial keratitis
  - Initial episode = oral therapy x 1 year
  - Multiple episodes = oral therapy (2 years to indefinite)
- HSV keratouveitis
  - Initial episode = oral therapy x 1 year
  - Multiple episodes = oral therapy (2 years to indefinite)

# HSV Keratouveitis

- Suspect with an acute rise in IOP
- Can occur with any of the three HSV disease presentations we have mentioned
- Absolute indication to dilate and evaluate the fundi
- MGMT
  - Appropriate topical steroid treatment (if epithelium intact) followed by slow taper
  - Full dose antiviral therapy
  - Cyclo
  - ? prophylaxis

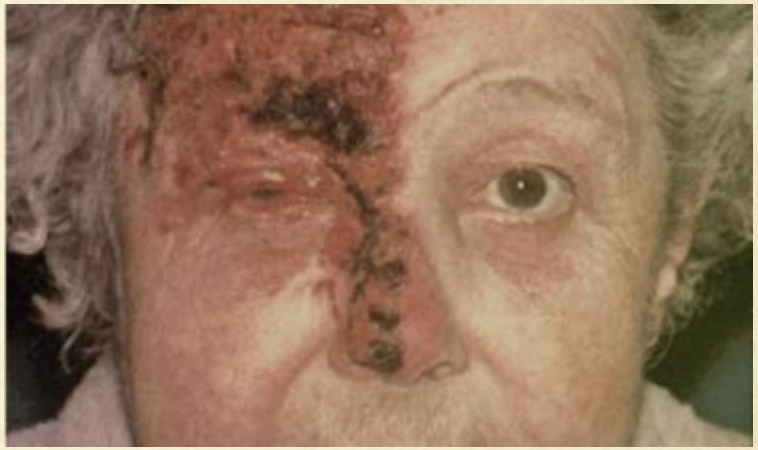
# Metaherpetic Ulcer

- Corneal ulcers that do not re-epithelialize or that re-epithelialize at an abnormally extended rate
  - Neurotrophic
  - May also be bacterial or fungal superinfections
- Management
  - Topical
  - Amniotic membrane



# Varicella

- The “shingles”
- Virology review
- HZO
  - When the reactivation of the latent virus involves the nasociliary branch of CN5

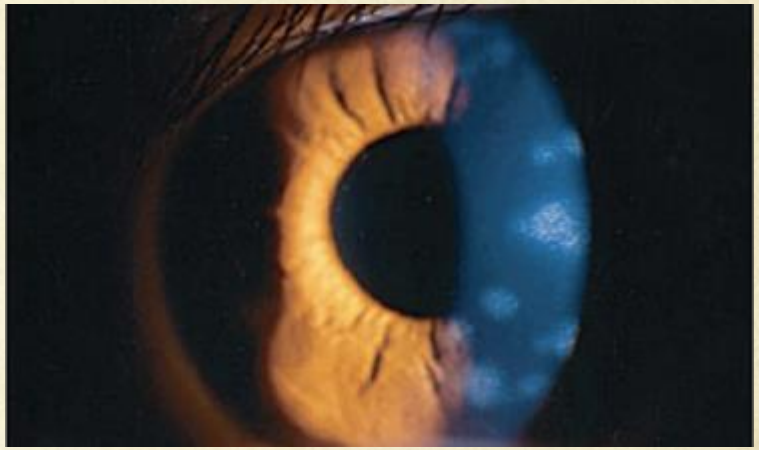


# Herpes Zoster Ophthalmicus

- Signs
  - Nose
  - Cornea
  - Conjunctiva
  - Adnexa
  - Lids

# HZO

- May cause
  - Eyelid swelling
  - Keratitis
  - Scleritis
  - Uveitis
  - Trabeculitis
  - Retinal necrosis
  - Papillitis
  - Nerve palsies
  - Cavernous sinus thrombosis
- Nummular keratitis
  - Subepithelial infiltrates seen most commonly during the second week of an HZO infection



# HZO Management

- Topical
  - Steroids
  - ? Zirgan™
- Systemic
  - Oral antiviral therapy must be started within 72 hours of symptoms so as to minimize the incidence of post-herpetic neuralgia
- Ways to deal with post-herpetic neuralgia
- Prophylaxis

# Check the Posterior Segment

- ARN
- BARN
- ORN

# University of Iowa Ophthalmology


- Welder JD, Kitzmann AS, Wagoner, MD. Herpes Simplex Keratitis. EyeRounds.org. December 31, 2012; Available from: http://EyeRounds.org/cases/160-HSV.htm