EYE CATCHING CASES

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Financial Disclosures

- I do not have any financial interest in any of the parts of the lecture today.

Objectives

- Review some of the common and uncommon cases seen in optometric practice
- Discuss key elements of examination and ancillary testing for proper diagnosis
- Discuss management of these pathologies and referral when appropriate

A COMPLICATED CORNEA...AND MORE
1/17/2019

COMPLICATED CORNEA
HISTORY

- 33 year old Hispanic Female
- CC: Here for cataract evaluation
- LE: 6 months ago – no mention of cataract
- Progressive decreasing vision over last year
- Light sensitivity and glare with sunlight and right driving
- Inhaling and irritation after spraying insecticide in eyes 10 days ago
  - Went to ER – eyes were irrigated extensively, no drops prescribed.
  - Improving symptoms with ARTs and cool compresses
- Past Medical Hx
  - High cholesterol
- Past Ocular Hx
  - None
- Family Hx
  - No blindness, glaucoma or AMD

COMPLICATED CORNEA
EXAM

- VA
  - OD: 20/100
  - OS: 20/80
- Current Glasses
  - OD: -6.50 -2.50x043
  - OS: -3.50 -4.75x097
- Keratometry
  - OD: 47.25 / 50.50 @ 146
  - OS: 48.50 / 55.00 @ 30
- Manifest Refraction
  - OD: -7.75 - 3.50x065 20/70
  - OS: -5.50 - 3.75x089 20/80

- Adnexa
  - WNL OD/OS
- Conjunctiva
  - 1+ papillae
  - Trace injection
- Cornea
  - Munson’s Sign OD/OS
  - No striae, no scarring OD/OS
- A/C
  - Deep quiet OD/OS
- Lens
  - Clear OD/OS
- Optic Disc
  - C/D: 0.30 OD/OS
  - No edema or pallor
- Macula
  - Normal OD/OS
- Vessels
  - Normal OD/OS
- Periphery
  - No holes/tears RD OD/OS

- Scleral Contact Lens:
  - BC: 49.00
  - Dia: 13.6
  - Power: -10.25
  - VA: 20/25

- Scleral Contact Lens:
  - BC: 50.00
  - Dia: 13.6
  - Power: -13.00
  - VA: 20/25

COMPLICATED CORNEA
TOPOGRAPHY AND SCLERAL

Scleral Contact Lens:
- BC: 49.00
- Dia: 13.6
- Power: -10.25
- VA: 20/25

Scleral Contact Lens:
- BC: 50.00
- Dia: 13.6
- Power: -13.00
- VA: 20/25
COMPPLICATED CORNEA
SCLERAL FITTING #2

- OCT 2017 (2 ½ Years later)
- Blurry vision, film over contacts
  - Filling scleral lens with multipurpose solution
- VA (w/scleral)
  - 20/300
  - 20/70

COMPPLICATED CORNEA
SCLERAL FITTING #2

Adnexa
- WNL OD/OS
Conjunctiva
- 1+ papillae
Cornea
- Munson's Sign OD/OS
- No striae, no scarring OD/OS
A/C
- Deep quiet OD/OS
Lens
- Clear OD/OS

Optic Disc
- C/D: 0.30 OD/OS
- No edema or pallor
Macula
- Normal OD/OS
Vessels
- Normal OD/OS

COMPPLICATED CORNEA
TOPOGRAPHY COMPARISON

MAY 2015

OCT 2017

COMPPLICATED CORNEA
SCLERAL FITTING #2

2015
- OD:
  - BC: 49.00
  - Dia: 15.6
  - Power: -10.25
  - VA: 20/25
- OS:
  - BC: 50.00
  - Dia: 15.6
  - Power: -13.00
  - VA: 20/25
2017
- OD:
  - BC: 52.00
  - Dia: 15.6
  - Power: -13.30
  - VA: 20/20
- OS:
  - BC: 54.00
  - Dia: 15.6
  - Power: -16.50
  - VA: 20/20
COMPLICATED CORNEA
SCLERAL DISPENSE #2

- Scleral Dispense (5 months later)
  - 20/40 OD
    - PH 20/25
    - Plano Over-refraction
    - Good fit and comfort
  - 20/20 OS
    - Good fit and comfort
  - F/U 1 month

COMPLICATED CORNEA
...AND MORE

- Scleral F/U –2 months
  - 20/80 OD
    - Distortion to left side of fixation
    - OR: Plano
    - Fitting: good clearance, limbal and edge fit
  - 20/20 OS

- OD: flat, round, grey subretinal lesion under macula
- OS: WNL
### Differential Diagnosis
- Myopic CNVM
- AMD CNVM
- Ocular Histoplasmosis
- Multifocal Choroiditis
- Idiopathic CNVM

### Suspected Myopic CNVM
- Referred to retina clinic
- IVA
- F/U 1 month
- Retina F/U (1 Month)
  - 20/60 with scleral lens
  - Improved vision and distortion
  - IVA #2
  - F/U 1 month
MYOPIC CNVM
RISK FACTORS

- Pathological myopia
  - Spherical equivalent > -6D
  - Axial length > 26.5mm
- Tessellated Fundus
- Posterior Staphyloma
- Fuchs’ Spot
- RPE Atrophy (Patchy > Diffuse)
- Lacquer Cracks

MYOPIC CNVM
PATHOLOGY

- Lacquer cracks induce intracellular changes in RPE that release VEGF
- Mechanical stretching of RPE cells up-regulates pro-angiogenic factors, including VEGF
- New vessels grow thru breaks in Bruch’s membrane (Lacquer cracks) or result from an atrophic area within the RPE

MYOPIC CNVM
EXAM

- Highly myopic patient with sudden decrease in VA (20/40 to 20/100) or onset of metamorphopsia
- Small (< 1DD) flat, greyish subretinal membrane
**MYOPIC CNVM**

**TREATMENT**

- Anti-VEGF
  - Lucentis = Eylea = Avastin
- Average improvement in BCVA was 13.8 letters after 12 months

**PEARLS**

- ~30% will develop mCNVM in the other eye
- Early detection and treatment is key
- Don’t forget about pathological myopia and CNVM in high myopes
  - Educate on risk factors
  - Amsler Grid

**OPTIC DISC DILEMMAS**

**Case #1**

- 42 year old, white male
- CC: blurry distance vision; headaches with extended periods of computer work and reading
- Ocular Hx: unremarkable
- Medical Hx: unremarkable
- Medications: None
**OPTIC DISC DILEMMAS**

**Case #1**

- MR: +0.25-0.50x135
- SLE: unremarkable
- DFE:
  - <0.10
  - Elevation 360
  - Sharp disc margins
  - No pallor

- MR: +0.75-1.00x060
- SLE: unremarkable
- DFE:
  - <0.10
  - Elevation 360
  - Sharp disc margins
  - No pallor

**Case #2**

- 11 year old, white female
- CC: referred for exam due to result of convergence insufficiency survey at school
- Headaches when she reads
  - 2-3x per week
  - Forehead and brow area
  - Relieved with ibuprofen
  - Do not disrupt daily activities
- Medical Hx: Unremarkable
- Medications: None

**OPTIC DISC DILEMMAS**

**Case #2**

- OD:
  - VA: 20/20 sc
  - Pupils: PERRL, no APD
  - EOM: smooth and full
  - Binocular Vision
    - CT: 4 XP
    - NPC: nose
    - Amps: 13
    - 80: 20/20/20
  - Cyclo MRx: Plano -0.75x010
  - SLE: WNL
  - DFE:

- OS:
  - VA: 20/20 sc
  - Pupils: PERRL, no APD
  - EOM: smooth and full
  - Binocular Vision
    - CT: 4 XP
    - NPC: nose
    - Amps: 14
    - 80: 20/25/20
  - Cyclo MRx: Plano -0.25x175
  - SLE: WNL
  - DFE:
OPTIC DISC DILEMMAS

Case #3

- 36 year old white female
- CC: vision will turn all white sometimes
  - Patient passed out and fell onto face 6/1/18 (3 months ago)
  - Headache starting at the base of the neck and extending thru right temple and behind right eye
    - Exacerbated by stress and activity
    - Variable pain from 4-8
    - Present daily
    - Improved with use of Excedrin
  - Episodes of vision turning white, this will last a few seconds and then return to normal
    - Occur multiple time per day
- Medical Hx
- Radiology
  - C/T done at ER was normal per patient; no MRI performed
- Medications:
  - Tramadol
  - Metaxolone
- Vital Signs
  - BP: 148/85
  - BMI: 35.2 (Obesity)
  - VA: 20/40cc
  - MRx: -1.00 -1.00x095
  - 20/25
  - EOM and Alignment: Full, Ortho
  - Confrontations: Full
  - SLE: WNL
  - DFE:
- OD: Optic Disc:
  - Severe disc edema; 360 elevation
  - No hemorrhages
  - Blurred margin, large vessel obscuration
  - Temporal exudate extending into macula
  - Vessels: WNL
  - Macula: nasal thickening d/t disc edema
  - Periphery: WNL
- OS: Optic Disc:
  - Severe disc edema; 360 elevation
  - No hemorrhages
  - Blurred margin, large vessel obscuration
  - Temporal exudate extending into macula
  - Vessels: WNL
  - Macula: nasal thickening d/t disc edema
  - Periphery: WNL
Optic disc edema ≠ Papilledema
- Papilledema is optic disc edema due to elevated intracranial pressure
- Papilledema ≠ Pseudotumor Cerebri or Idiopathic Intracranial Hypertension

Differential DDx: Disc Edema
- Pseudopapilledema
- Optic Nerve Head Drusen
- Congenitally Full Disc
- Malinserted Disc
- Tilted Disc
- Optic Nerve Hypoplasia
- CRVO
- Optic Neuritis
- Diabetic Papillopathy
- Hypertensive Disc Edema
- NAION
- Compressive
- Papilledema

OPTIC DISC DILEMMAS

DDx by Dr. Freedman

Pseudopapilledema
- Optic Nerve Head Drusen
- Congenitally Full Disc
- Malinserted Disc
- Tilted Disc
- Optic Nerve Hypoplasia

Papilledema
- Intracranial Tumor
- Malignant HTN
- Venous sinus thrombosis
- Chiari malformation
- AV Malformation
- Meningitis/Encephalitis
- Idiopathic Intracranial Hypertension
Crowded Disc

- Asymptomatic
- Smaller than average disc
  - 1.2 – 2.5 mm
  - Average 1.88mm
- Correction Factor
  - 78D x 1.11
  - 90D x 1.33
- Hyperopic eyes
- Slightly hyperemic

Malinserted Disc

- Oblique insertion of optic nerve to the globe
- Tilted along vertical axis
- Nasal elevation, temporal depression
- Scleral crescent
- Myopes

Tilted Disc Syndrome

Triad of findings:
- Tilted Disc
  - Vertical axis itself is rotated downward
  - Superior elevation, inferior depression
- Decreased acuity
- Bi-temporal visual field defects

Optic Nerve Head Drusen

- Buried or Visible
- Elevation of disc
  - With or without blurred margins
- Anomalous vasculature
  - Early branching at disc
  - Tortuosity
- Move to surface as patient ages
  - Scalloped borders
- Usually Asymptomatic
- Can have VF defects
The Real Diagnostic Dilemma...

**OPTIC DISC DILEMMA**

- Comprehensive History
  - Headache
  - Transient visual obscurations
  - Tinnitus, Vertigo
  - Diplopia
- Medical Hx
  - Medications
  - Systemic risk factors

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DDx by Dr. Freedman

**Papilledema and Causes of Increased Intracranial Pressure**

1. Hydrocephalus - Normal
2. Intercranial Tumors - most commonly by using cerebrospinal fluid (CSF) and subarachnoid space
3. Demyelination - Chronic 
   - Trauma
   - Tumors
   - Infarction
   - Inflammatory
   - Infectious
   - Connective tissue disease
4. Trauma
5. Ocular Compression - orbital, nasopharyngeal
6. Vascular anomalies - AVM, AV malformation, arterial venous malformation
7. Obstruction to Virchow-Robin spaces - arteriovenous malformation, arteriovenous malformation
8. Obstruction to Virchow-Robin spaces - arteriovenous malformation
9. Endocrine: Acromegaly, Cushing syndrome, hyperparathyroidism
10. Sleep Apnea
11. Other: Systemic causes, metabolic disorders
12. Infected intracranial mass

**OPTIC DISC DILEMMA**

- Acuity
- Refractive error
- EOM and Cover test
  - VI palsy most common with PE (38%)
    - Esotropia
    - Abduction deficit
**OPTIC DISC DILEMMA**

**EXAM**

Evaluation of the Optic Disc

- Size
- Cup
- Margins
- Vasculature
- SVP

**ANCILLARY TESTING**

**Visual Field**
- Papilledema
- Enlarged blind spot
- Peripapillary Civaz

**OCT**
- Papilledema: thickened RNFL
- ONHD: thinning of RNFL
- Can also show nodular shadows (drusen)

**FAF**
- ONHD can show auto-fluorescence
- Can also show nodular shadows (drusen)

**B-Scan**
- ONHD show as highly reflective

**FA**
- Papilledema: ONH will show hyperfluorescence and peripapillary leakage

**KEY FEATURES ONHD**

**Papilledema**
- Visual Symptoms: TVL, VFD
- Headaches: None
- Neurological Symptoms: None
- Optic Nerve Appearance: Elevation confined to disc, SVP
- Vascular: Anomalous branching pattern

**ONHD**
- Visual Symptoms: TVL, VFD, Diplopia
- Headaches: None
- Neurological Symptoms: None
- Optic Nerve Appearance: Elevated swollen nerve, hyperemia, peripapillary vessel obscuration, +/- FSH, +/- CVLS, +/- Pater’s lines, SVP absent
- Vascular: Microvascular dilation

**DIFFERENTIATING BETWEEN CONGENITAL AND ACQUIRED DISC ELEVATION**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Congenital</th>
<th>Acquired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nerve Fiber Layer</td>
<td>Clear</td>
<td>Opaqued</td>
</tr>
<tr>
<td>Large Disc Vessels</td>
<td>Anomalous</td>
<td>Normal</td>
</tr>
<tr>
<td>Small Disc Vessels</td>
<td>Normal</td>
<td>Telangiectatic</td>
</tr>
<tr>
<td>NFL Hemorrhage</td>
<td>Rare</td>
<td>Frequent</td>
</tr>
<tr>
<td>Physiologic Cup</td>
<td>Small or absent</td>
<td>Normal (but may be obscured by edema)</td>
</tr>
<tr>
<td>Drusen</td>
<td>Sometimes present</td>
<td>Absent</td>
</tr>
</tbody>
</table>
OPTIC DISC DILEMMA

WORKUP

- Brain MRI with and without contrast
  - Urgent/Emergent
  - Consider symptoms and exam
- Lumbar Puncture
  - After imaging
  - Opening pressure
  - CSF Study
- MRV
  - Venous sinus thrombosis

OPTIC DISC DILEMMA

WORKUP

- Follow Up
  - Weeks to month(s)
  - Monitor Symptoms
  - Fundus Photos
  - Visual Field
- Treatment – IIH
  - Stop any causative medications
  - Weight Loss
  - Acetazolamide or Lasix

OPTIC DISC DILEMMAS

CASE #1

Optic Disc
- Size: Normal
- Cup: Crowded
- Margins: Sharp
- Vasculature
  - No obscuration
  - SVP: Absent
- HVF: Full

Plan:
- F/U 3-4 months
- Optic Disc Eval

OPTIC DISC DILEMMAS

CASE #2

OS
- Optic Disc
  - 0.10
  - Moderate elevation worst nasally
  - Blurring of nasal disc margin; sharp margin temporally
  - No Pallor, No hemorrhage

OD
- Optic Disc
  - 0.10
  - Moderate elevation worst nasally
  - Blurring of nasal disc margin; sharp margin temporally
  - No Pallor, No hemorrhage
OPTIC DISC DILEMMAS
CASE #2 – 3D OCT

OPTIC DISC DILEMMAS
CASE #2 - HVF

OPTIC DISC DILEMMAS
CASE #2 – B-Scan
**OPTIC DISC DILEMMAS**

**CASE #2**

- Optic Disc
  - Size: Normal
  - Cup: Crowded
  - Margins: Blurred nasally
  - Vasculature:
    - No obscuration
    - Early bifurcations OS
    - SVP: Absent
- HVF: Full
- OCT: Suspected ONHD
- B-Scan: Suspected ONHD

**Diagnosis**

- Suspected Optic Nerve Head Drusen OU

**Plan:**

- F/U 2 months
- Optic Disc Eval
- HVF

**CASE #3**

- Optic Disc
  - Severe disc edema; 360 elevation
  - No hemorrhages
  - Blurred margin, large vessel obscuration
  - Temporal exudate extending into macula
  - Vessels: WNL
  - Macula: nasal thickening due to disc edema

- Optic Disc
  - Severe disc edema; 360 elevation
  - No hemorrhages
  - Blurred margin, large vessel obscuration
  - Temporal exudate extending into macula
  - Vessels: WNL
  - Macula: nasal thickening due to disc edema
OPTIC DISC DILEMMAS
CASE #3 – 3D OCT

- Optic Disc
  - Size: ?
  - Cup: obscured
  - Margins: blurred 360
  - Vessels:
    - large vessel obscuration
    - FSH
  - SVP: Absent

- HVF:
  - Enlarged blind spot
  - Constriction

- OCT
  - Severe 360 elevation
Diagnosis:
- Bilateral optic disc edema
- Suspicious for papilledema

Plan:
- MRI head within 1 week
- F/U 1 week

1 Week
- MRI normal
- Vision stable
- Symptoms stable
- LP within 1 week

2 Week
- LP - opening pressure 25
- CSF study normal
- Start acetazolamide 500mg BID
- Follow up 1 month
Case 1
- Congenital disc anomaly
- F/U 3 months

Case 2
- Suspected buried optic nerve head drusen
- F/U 2 months

Case 3
- Papilledema
  - Pseudotumor cerebri
  - Normal MRI
  - High Opening Pressure
  - Resolving on acetazolamide

PEARLS
- DON'T PANIC!
  - Comprehensive History
  - Optic Disc Evaluation
  - HVF
  - OCT
- Consider all exam findings
  - Workup, Refer, Follow

BLESSED BY BACKUP

67 year old, white male
- CC: cloudy circle in vision OD
  - Referred by endocrinologist for cloudy vision
  - Woke up 10 days ago and OD had a cloudy circle in vision; "looks like a donut" central vision is good
  - No new neurological symptoms
- Medical Hx
  - Type 2 Diabetes
  - HTN
  - HLD
VA: 20/25  
Pupils: PERRL, no APD  
EOM and Alignment: Smooth and full, Ortho  
Confrontations: FTCF  
SLE: 1+ NS  
DFE:  

OD: Inner retinal thickening with trace CME  
OS: flat  

Optic Disc:  
0.30  
No edema or Pallor  
Macula appears flat  
Vessels: CWS along temporal arteries; sluggish perfusion  
Periphery: WNL  

DDx:  
- BRAO  
- CRAO  
- Ocular Ischemic Syndrome  

Assessment and Plan:  
- Central retinal artery occlusion  
  - With patent cilioretinal artery  
  - Next day referral to retina clinic  
- Patient education about diagnosis and systemic complications including risk of stroke  

BACKUP OCT  
BACKUP DDX
CRAO
RISK FACTORS

- Age
- Male > Female
- Smoking
- HTN
- Obesity
- Diabetes
- Hyperlipidemia
- Cardiovascular disease
- Coagulopathy

CRAO
PATHOLOGY

- Obstruction of the retinal vessel by embolus, thrombus, trauma, inflammation or spasm

FA REPORT OD: delayed arterial filling with hyperfluorescent changes in veins.

BACKUP
WORKUP

- Systemic Workup (within 1 week)
  - Holter
  - Echocardiogram
  - Carotid Ultrasound
  - ESR/CRP
- 80% blockage of right carotid artery
  - Now s/p angioplasty
  - Maintains 20/25 VA OD
**CRAO**

**EXAM**
- Vision loss
- Sudden
- Painless
- Worse than 20/400 (75%)
- APD
- Cherry Red Spot
  - Develops within a few hours
  - Resolves in 4-6 weeks

**CRAO**

**TREATMENT**
- First 3-4 hours
  - Lower IOP
  - Topical drops
  - A/C Paracentesis
  - Ocular Massage
    - Contact gonio lens
- Emergency Room?
**CRAO PEARLS**

- Ocular findings are a warning sign for an ischemic stroke
- High correlation with ischemic finding on brain MRI
- Systemic workup is key
- Visual prognosis is poor

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**ARE YOU SERIOUS!**

**HISTORY**

- 49 year old, white male
- CC: spot in OS that blocks central vision
  - Onset 5-6 weeks ago
  - Seems to be intermittent; present more when he pays attention to it
  - Looks like a dim disc floating around

**EXAM**

<table>
<thead>
<tr>
<th>OD</th>
<th>OS</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA: 20/20 cc</td>
<td>20/20 cc</td>
</tr>
<tr>
<td>Pupils: PERRL, no APD</td>
<td>Pupils: PERRL, no APD</td>
</tr>
<tr>
<td>EOM: full</td>
<td>EOM: full</td>
</tr>
<tr>
<td>Confrontations: full</td>
<td>Confrontations: full</td>
</tr>
<tr>
<td>SLE: unremarkable</td>
<td>SLE: unremarkable</td>
</tr>
<tr>
<td>DFE: C/D: 0.20</td>
<td>DFE: C/D: 0.20</td>
</tr>
<tr>
<td>Macula: WNL</td>
<td>Macula: round serous elevation</td>
</tr>
<tr>
<td>Vessels: WNL</td>
<td>Vessels: WNL</td>
</tr>
<tr>
<td>Periphery: WNL</td>
<td>Periphery: WNL</td>
</tr>
</tbody>
</table>
1/21/2019

Neurosensory Detachment OS
Small PED temporal to fovea

DDx:
- Central Serous Chorioretinopathy
- CNVM

Diagnosis: Central Serous Chorioretinopathy
Amsler grid provided
F/U 1 month

ARE YOU SER(I)OUS!

CC: Stable, no changes
VA: 20/20 OS
Macula: unchanged
OCT: unchanged
F/U: 1 Month

6 WEEKS

CC: Left eye seems to have improved
VA: OS 20/25
SLE: unremarkable
DFE: stable serous elevation OS
OCT: slightly worsened NSD
F/U 1 month in retina clinic

4 MONTHS
ARE YOU SER(I)OUS!

5 MONTHS

- CC: Distortions dissipating OS
- VA: 20/20 - OS
- DFE:
  - Flat
  - RPE changes with few drusen like opacities temporal macula
- OCT:
  - Small PED, no NSD
  - F/U
  - 6 Months

CSCR

- RISK FACTORS
  - Stress
  - Corticosteroids
  - H. Pylori
  - Autoimmune diseases
  - Sleep Disturbances
  - Hypertension

- PATHOLOGY
  - Increased vascular permeability of choroid

CSCR EXAM

- Blurry vision
- Visual distortion
- Dark area in central vision
- VA: 20/20 – 20/200
- Hyperopic shift (+1.00)
- Round serous elevation of macula
- OCT
  - Neurosensory detachment
  - Pigment epithelial detachment

CSCR EXAM

- Treatment
  - Self Limiting (weeks to months)
  - Stop steroids
  - Anti-corticosteroid therapy
  - Anti-VEGF
  - Laser photocoagulation
  - PDT
Treatment = Observation

- Associated PED is not uncommon
- Referral and FA for un-resolving or atypical presentation

**PEARLS**

- 30 year old, white male
- 3 day history of redness and irritation OD
- Watery discharge, crusting in the AM
- No pain, no photophobia
- No vision changes
- Vigamox QID
  - Got lidocaine in eyes 7 days prior during dermatology laser session
  - Irrigated in ED; diagnosed with abrasion
  - F/U 2 days later with TTUHSC Ophthalmology was normal
- Medical History
  - Colorectal cancer

**HISTORY**

- OD
  - 20/20 sc
  - Adnexa: WNL
  - Conjunctiva:
    - 2+ injection
    - 2+ follicles
    - 1+ papillae
  - Cornea:
    - 1+ diffuse SPK
    - No abrasion
    - No infiltrate
  - A/C: Deep and quiet

- OS
  - 20/20 sc
  - Adnexa: WNL
  - Conjunctiva: WNL
  - Cornea: WNL
  - A/C: Deep and quiet
…WAIT FOR IT
EXAM – DAY 1
Dx: Viral Conjunctivitis OD
motherhood QID OD
motherhood hygiene discussing
motherhood 3 days

…WAIT FOR IT
EXAM – DAY 3
motherhood Exam
motherhood No subjective improvements
motherhood Very slight improvement clinically
motherhood No involvement OS
motherhood Plan
motherhood Continue Tobradex QID OD
motherhood F/U 3-4 days

…WAIT FOR IT
EXAM – DAY 6
motherhood OD
motherhood Symptoms starting
motherhood 20/20 sc
motherhood Adnexa: WNL
motherhood Conjunctivitis:
motherhood 2+ chemosis
motherhood 2+ injection
motherhood 1+ follicles
motherhood 2+ papillae
motherhood Significant mucoid discharge
motherhood Cornea:
motherhood trace diffuse SPK
motherhood No infiltrates
motherhood A/C Deep and quiet

…WAIT FOR IT
EXAM – DAY 6
motherhood OS
motherhood Symptoms starting
motherhood 20/20 sc
motherhood Adnexa: WNL
motherhood Conjunctivitis:
motherhood 2+ chemosis
motherhood 2+ injection
motherhood 2+ papillae
motherhood Significant mucoid discharge
motherhood Cornea:
motherhood trace diffuse SPK
motherhood No infiltrates
motherhood A/C Deep and quiet

…WAIT FOR IT
EXAM – DAY 6
motherhood DDx:
motherhood Viral Conjunctivitis
motherhood DKA
motherhood Allergic Conjunctivitis
motherhood Delayed lidocaine toxicity
motherhood BAK allergy
motherhood Treatment
motherhood Durezol QID
motherhood Stop Tobradex
motherhood PFAs
…WAIT FOR IT
EXAM – DAY 9

**OD**
- Mild Improvement
  - 20/40 sc
  - Adnexa: Moderate edema of UL and LL
  - Conjunctiva:
    - Trace chemosis
    - 2+ injection
    - 2+ papillae
    - Significant mucoid discharge
  - Cornea:
    - 2+ diffuse SPK
    - No infiltrates
    - A/C: Deep and quiet

**OS**
- Mild Worsening
  - 20/20 sc
  - Adnexa: Mild edema of UL and LL
  - Conjunctiva:
    - Trace chemosis
    - 2+ injection
    - 1+ papillae
    - Significant mucoid discharge
  - Cornea:
    - 2+ diffuse SPK
    - No infiltrates
    - A/C: Deep and quiet

Girlfriend and father have redness and irritation

…WAIT FOR IT
EXAM – DAY 16

**OD**
- Improving – Mild irritation, matting
  - 20/60 sc
  - Adnexa: Mild edema of UL and LL
  - Conjunctiva:
    - Chemosis resolved
    - 2+ injection
    - Significant mucoid discharge
  - Cornea:
    - 3+ diffuse SPK
    - No infiltrates
    - A/C: Deep and quiet

**OS**
- Improving – Mild irritation, matting
  - 20/70 sc
  - Adnexa: Mild edema of UL and LL
  - Conjunctiva:
    - Chemosis resolved
    - 2+ injection
    - Pseudomembrane in conjunctival sac
  - Cornea:
    - 3+ SPK
    - No infiltrates
    - A/C: Deep and quiet

…WAIT FOR IT
EXAM – DAY 16

- Removed pseudomembrane OS
- Betadine treatment OU
- Ocufen QID OU x 4 days
- Continue Durezol QID
- Call back for f/u

…WAIT FOR IT
EXAM – DAY 38

**OD**
- Improved
  - 20/20 sc
  - Adnexa: WNL
  - Conjunctiva:
    - Trace injection
    - Trace papillae
    - Cornea:
      - Trace diffuse SPK
      - No infiltrates
      - A/C: Deep and quiet

**OS**
- Improving – Mild irritation, matting
  - 20/25 sc
  - Adnexa: WNL
  - Conjunctiva:
    - Trace injection
    - Trace papillae
    - Cornea:
      - Trace diffuse SPK
      - No infiltrates
      - A/C: Deep and quiet
...WAIT FOR IT
EXAM – DAY 38

- Taper Durezol
  - TID x 3 days, BID x 2 days, QD x 2 days
  - Continue PFATs
  - RTC for refraction if blur continues

EPIDEMIC KERATOCONJUNCTIVITIS

- Adenovirus

SIGNS AND SYMPTOMS

- Conjunctival hyperemia
- Chemosis
- Photophobia
- Blurred Vision
- Subepithelial infiltrates
- Eyelid Swelling
- Pseudomembrane
- Follicular reaction
- Punctate Epithelial keratitis

EKC

TREATMENT

- Treatment
  - Palliative
    - Artificial tears
    - Cool compresses
  - Topical Steroid
  - Betadine Rinse
  - Dexamethasone-Betadine combo
EKC Pearls

- Steroids can help control inflammation but may lengthen course of infection
- Betadine rinse can help decrease viral load but is highly toxic to the cornea
- Topical betadine-dexamethasone combo may be the future

50 year old, white female
CC: DM eye exam
- history of abrasion OD
- Long history of things to “fix her cornea”
- Denies pain, redness, irritation
Ocular Hx:
- Diabetic retinopathy 2017
- PCIOL – 2015
- Lateral tarsorrhaphy OD
  - Poorly healing abrasion OD
  - Presumed herpetic in nature
  - No pain thru this episode
- Medical Hx:
  - DM, HTN, HLD, Kidney disease
- Ocular Medications:
  - Prednisolone acetate QD OD
  - Restasis BID OU
  - Valacyclovir 1g QD
  -Refresh TID-QID
- Systemic medications:
  - Atorvastatin
  - Levoxyl
  - Gabapentin
  - Neovig
  - Warfarin

Ocular Exam:
- EOM: Full
- Confrontations: constricted
- Adnexa: lateral tarsorrhaphy
- Conjunctiva: WNL
- Cornea: 2-3+ SPK, worst centrally; faint stromal scar?
- A/C: deep and quiet
- Lens: PCIOL in good position

OS:
- EOM: Full
- Confrontations: Full
- Adnexa: WNL
- Conjunctiva: WNL
- Cornea: 1-2+ inferior SPK
- A/C: deep and quiet
- Lens: PCIOL
Vitreous: VH inferiorly
C/D: 0.40
Macula: flat, no fluid
Vessels: arteriolar narrowing
Periphery: s/p full PRP

Vitreous: no heme
C/D: 0.40
Macula: flat, no fluid
Vessels: arteriolar narrowing
Periphery: s/p full PRP

DDX
- Dry eye
- Neurotrophic keratitis
- Topical drug toxicity
- Chemical injury
- Limbal stem cell deficiency

PLAN
- Neurotrophic keratitis
  - CPM
    - Prednisolone acetate QD OD
    - Restasis BID OU
    - Valacyclovir 1g QD
    - NPAT’s Q1-2 hr OU
    - P/U 1 month

- PDR
  - Active VH OD
  - Inactive OS
  - Retina follow up 2 weeks

NEOTROPHIC KERATITIS
- HZV, HSV
- Topical Anesthetic
- Diabetes
- Ocular Surgery
  - LASIK/PRK
  - Retinal laser
- Any damage to V
  - Surgical
  - Traumatic
NEUROTROPHIC KERATITIS

PATHOLOGY
- Degenerative disease of cornea resulting from impaired corneal innervation
  - Lack of neuromodulation leads to degeneration

STAGES
- Stage 1
  - Irregular epithelium; SPK
  - Corneal edema
  - Corneal neovascularization
  - Corneal scarring
- Stage 2
  - Recurrent or persistent epithelial defects
- Stage 3
  - Stromal involvement
    - Ulcer
    - Melting
    - Perforation

TREATMENT
- Stage 1
  - Artificial tears/ointment
  - Autologous serum tears
  - Bandage contact lens
- Stage 2
  - Bandage contact lens
  - Amniotic membrane graft
  - Antibiotic drops
  - Steroid?
  - Tarsorrhaphy
- Stage 3
  - Ulcer treatment and healing
  - Prevention of perforation
  - Overcorrection
    - Nerve growth factor
  - Surgical

PEARLS
- Can be easily confused with moderate/severe dry eye
- Consider NK in patients with a history of HSV or HZV
- Educate patient on potential vision threatening complications and importance of follow up