What a Pain!
Common causes and management of ocular pain in the optometric practice

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**INTRODUCTION**

- **Introduction:**
  - Dr. Tyler – No disclosures
    - Credentials: Associate Professor, Chief of Primary Care at The Eye Care Institute

- **Case-based presentation:**
  - Focus → Non-traumatic, non-infectious causes of ocular pain
  - Included → Latest recommendations for oral & topical pain management
The Showman

- 60 year old Hispanic female

- Complains of:
  - Eye pain, left eye only, longstanding
  - Blurry vision left eye only, 1 week duration

- Constant, blur is somewhat alleviated when using Systane Ultra AT
History

- Medical History:
  - Hypothyroidism (synthroid 25 mcg per day)
- Family history unremarkable
- Social history: Non-smoker, non-drinker, no caffeine use
- Not currently working
- ROS: Generally unremarkable except for persistent cough for several years
Exam Findings

- Entrance testing:
  - All unremarkable; patient appears uncomfortable and photophobic OS

- Retinoscopy/refraction:
  - Difficult due to patient discomfort OS > OD

- BVA: 20/25 OD, 20/100 OS
Returning to the history

■ “Have you ever had ANY systemic conditions?”

■ “Oh yeah……something about….Showman’s syndrome?”

■ “Did you ever take any special eyedrops for it? Might have been kind of expensive?”

■ “Now that you mention it, I used to put these little packets of Re State It”
Our management

- Reinstitute Restasis BID
- Suggest rheumatology workup for Sjogren’s
  - Possible medical management w/ Salagen 5 mg TID
- Prescribe Azasite BID until follow up
Sjogren’s Syndrome

Differential Diagnosis:

- Dry Eye secondary to lid disease/blepharitis
  - Evaporative (much more common)
  - Considerations → Demodex

- Medicamentosa →
  - Look at history of patient, types of drops used, preservatives
  - Bilateral, diffuse PEK following the use of a therapeutic medication
Sjogren’s Syndrome

- Multisystem disease
- Prevalence 0.1% - 3%
- Characterized by lymphocytic infiltration of exocrine glands & other organs
- Lacrimal glands
- Salivary glands
- Lymphoma associated
- Compared to general population:
  - Greater likelihood of greater pain, fatigue, and disability; mood/affective/cognitive disorders
OUR patient: Follow Up

- Returned after 2 weeks using Azasite BID, Systane Ultra q2h, Restasis BID
- Symptoms significantly improved
- Staining significantly improved
- Other signs of DES
  - No significant improvement
OUR patient: Follow Up

- Remanded to q8-10 week follow up
- Referred to rheumatology, patient declined
Treatment Goals

- First → Treat the CAUSE
- Second → Adequately & effectively treat the pain
Oral Options for pain management: NSAIDS/ Ibuprofen

- Analgesic, antipyretic, anti-inflammmatory*
- Analgesic dose is 200-400mg q 4-6 hrs
- “Therapeutic dose” is 600-800mg q 4-6 hrs
- Pregnancy category C

- Uses:
  - Ocular surface injuries
  - Moderate-severe episcleritis
  - Mild scleritis
  - Others...
Options for pain management - Other Oral NSAIDS: Naproxen sodium

- Branded as Aleve, Anaprox, Naprosyn

- **OTC formulation of 220mg naproxen sodium contains 200mg naproxen**

**Dosing for Adults:**

- OTC $\rightarrow$ 220 mg q8h, not to exceed 2 caplets in any 8-12 hr period
- Rx $\rightarrow$ 250, 275, 375, 500, 550 mg; XR 375, 500, 750 mg (once daily)
Options for pain management - Other Oral NSAIDS

**Meloxicam** – typically for arthritis, Osteo- & RA
- Available Rx only – Dosed QD:
  - 7.5 and 15 mg tabs
  - 7.5 mg/5mL suspension

**Celecoxib (Celebrex)** - COX-2 inhibitor
- Available only Rx:
  - 50, 100, 200, & 400 mg
- Adult dose:
  - 400 mg initially then 200 mg q12h
Oral NSAIDS - Risks, Warnings and Contraindications

- Cardiovascular risk
  - All NSAIDS may increase risk of MI & stroke

- GI risk:
  - Increase risk of bleeding, ulceration, and gastric or intestinal perforation

- CI:
  - ASA allergy, chronic hepatitis, pain from coronary artery bypass graft surgery
Oral NSAIDS - Risks, Warnings and Contraindications

- Caution in CHF, HTN, asthma, GI ulcer, renal impairment
- All oral NSAIDS listed are pregnancy category C
Options for pain management - Acetaminophen

- AKA, Tylenol
  - Available OTC
    - 325, 500 tabs; 325, 500, 650 caplet
    - 500 capsule and geltab
    - 80 mg chewable and dissolvable tab
    - various concentrations in liquid
  - Available in many combination products Rx
Options for pain management - Acetaminophen

- AKA, Tylenol
  - Due to multiple sources of tylenol in combination with other medications...need to be careful
  - Usual adult dose 325 – 500 - 650 mg 1-2 tabs q6h NOT to exceed 4 grams/day
  - Main CI: Liver damage → the leading cause of acute liver failure in the U.S.!
Options for pain management - Oral NSAIDS: Aspirin

- Analgesic, anti-pyretic, blood thinner, **mild anti-inflammatory**
- Cost-effective
- Usual dose for pain and fever:
  - Adults 325–650mg q4-6h, not to exceed 4g/dy
- CI: recent stomach or GI bleeding, bleeding disorder, Coumadin use, allergy to other NSAIDS, heavy alcohol use
Options for pain management - Oral NSAIDS: Aspirin

- CI: pregnant/breastfeeding women

- Risk of Reye’s Syndrome when used to treat flu- and cold-like symptoms – can be deadly

- FDA recommends that ASA & ASA-containing products not be used in pts under age 19 during episodes of fever-causing or viral illnesses
Other options for our patient

- Acupuncture
- Punctal occlusion
- Moisture chamber devices at night
- Nutritional supplementation
  - Omega-3 supplements: 1500mg DHA+EPA for “regular” dry eye/
    3000mg for Sjogren’s
- Autologous serum eye drops
- Transdermal Refresh PM
- Tarsorrhaphy
- Lipiflow (by TearScience)
Don’t forget:

- Proparacaine: dosing limitations

  - Be cautious of patient’s stealing drop
  - ** Recalcitrant “corneal sloughing”
  - Difficult to ascertain → pts usually don’t “fess up” easily
General Options: pain management

- Non-pharmacological / in-office
  - Homeopathic remedies
  - Keep an open mind as 50% of pts seek ‘alternative’ or ‘complementary’ care on the internet
  - Caution with home-formulated remedies popularized on the internet
  - OFTEN combined with tap water → Increased risk of acanthamoeba
Homeopathic Remedies

Top 10 Home Remedies for Pink Eye (Conjunctivitis)

- Calendula
- Cold or Warm Compresses
- Boric Acid
- Black Tea
- Eyebright
- Breast Milk
- Milk & Honey
- Aloe Vera
- Saline Solution
- Apple Cider Vinegar
Madame Professor

- 71 YO female presents to urgent care service with a red, “itchy”, painful eye OS

- Started 2 day(s) prior
- Moderate pain but worsening; (+)photophobia
- Concurrent periorbital redness & matted lashes

- Pt is using an unknown lubrication drop
History

- Upon further questioning
  - Denies using any new soaps or lotions
  - No Hx of contact with any sick individuals or other people with red eyes

- Additional notes:
  - Headache – about the same time as redness; using Aleve

- Social history:
  - Non-smoker, non-drinker, some caffeine use

- Retired professor

- Family history: High cholesterol
History

- **Medical History:**
  - “Arthritis”
  - H/O elbow, shoulder and knee pain
  - Self Dx
  - Hypercholesterolemia

- **Medications:**
  - Omega-3
  - Glucosamine Sulfate
  - Omeprazole
  - Crestor
Exam Findings

- BVA: 20/25-1 OD, 20/25 OS
- Entrance testing:
  - CF: unremarkable
  - Motility: Full OD and OS but patient appears uncomfortable in upgaze
  - Pupils: mild photophobia OS, ERRL (-)APD
- (-) PAN
- Tonometry: 17mmHg OD and OS
**Slit Lamp Exam Findings**

- **Conjunctiva:**
  - OD: tr diffuse injection & OS: 1+ diffuse injection

- **Cornea:**
  - OD: pigment on endo, TBUT = 7 secs
  - OS: pigment on endo, (+) ropey discharge, TBUT = 7 secs

- **Anterior Chamber:**
  - OD: trace cells,
  - OS: 1+ cell, trace flare

- **Iris/Lens:**
  - No Synechiae, (+) “old” pigment ant. lens surface
Posterior Segment

- **Optic Nerve:**
  - OD: notching inf >> sup; flat, good color
  - OS: flat, sharp, good color

- **CD Ratio:**
  - Vertical: .75  Horizontal: .65
  - Vertical: .6  Horizontal: .6

- **Macula:**
  - OD & OS: mild mottling
Diagnosis & Management

1. Iritis, OS>>OD

- Appears chronic due to pigment on lens/corneal endothelium/relatively mild symptoms

- Prescribed Pred Forte 1% q2h OU
  - Educated pt to shake bottle before instillation

- Instilled 2gtts Cyclopentolate 1% OU in-office

- Referred pt to PCP for bloodwork & clinical evaluation

- RTC -2 days for f/u for iritis
Additional Diagnosis & Mx

2. Dry Eye Syndrome OU
   ■ Pt recommend PFATs for discomfort

3. Self-Dx “Arthritis” for years
   ■ Referred pt to PCP for serology and evaluation
     ■ Consider referral to rheumatology

4. Glaucoma Susp OD>OS vs. Physiologic
   ■ Discussed findings & silent, progressive nature of glaucoma
   ■ RTC 2 days for FU and will begin to perform additional baseline testing (photos, gonio, pach, OCT, VF, etc.)
Management

- Pt responded very well to Pred Forte
  - Initially q2h while awake and 2x/overnight – nearly resolved 2 days later and no cells noted
  - Started taper

Serology Surprise!

- ANA, RF and ESR
- CBC with differential → Absolute Lymphocytes (Lymphocytosis)
Lymphocytosis

- Lymphocytosis is a high lymphocyte count (increased white blood cells).
  - Role of Lymphocytes: help fight off diseases
  - Normal to see a temporary rise after infection

- A count significantly higher than 3,000 lymphocytes in a microliter of blood is generally considered to be lymphocytosis in adults
Lymphocytosis

Specific causes of lymphocytosis include:

- Acute lymphocytic leukemia
- Chronic lymphocytic leukemia
- Cytomegalovirus (CMV) infection
- HIV/AIDS
- Mononucleosis
- Multiple myeloma
- Infectious conditions including:
  - Tuberculosis, Vasculitis, Whooping cough
An Unlikely Suspect

- 28 year old white male
- Presents with complaints of intermittent blurred vision OU with spectacles
  - Morning vision is ‘perfect’
  - Evening vision is terrible
    - Self-measured using an iPad app at 20/80 – 20/100 vs 20/20 in the mornings
An Unlikely Suspect

- Soft contact lenses provide better, more consistent vision but patient is unable to wear due to discomfort

- Diagnosed with CLARE previously
  - AT therapy QID helped somewhat but not enough to resume CL wear
An Unlikely Suspect

Med Hx:
- (+) psoriasis → topical steroid cream prn

Family Hx: Non-contributory
Exam findings

- VA w/ specs:
  - 20/200 OD
  - 20/80 OS

- VA w/ SCL (biofinity):
  - 20/40+ OD
  - 20/30 OS

- Staining and whorls on cornea OD>OS

- Immediate tear break-up time (TBUT) OU

- Minimal tear meniscus OU
Diagnosis

- Severe dry eye syndrome
- Possible contributory limbal stem cell deficiency
Limbal Stem Cell Deficiency

- Damage or dysfunction of limbal stem cells → *invasion of conjunctival epithelium onto cornea* → epithelial defects

- Unilateral or Bilateral

- Partial or Total
Clinical findings

- Decreased vision
- Pain
- Contact lens intolerance
- Neovascularization
- Chronic inflammation
- Poor epithelial integrity
- Pannus

IN SEVERE CASES CAN LEAD TO BLINDNESS
TREATMENT – At Initial Presentation

- Restasis (cyclosporine-A) BID OU
- Alrex QID OU
- Preservative-Free Artificial Tears q1h OU
- OTC Analgesics PRN
Two weeks later....

- **VA with specs:**
  - 20/40-2 OD *(from 20/200)*
  - 20/40+1 OS *(from 20/80)*

- **IOP:** 18/19mmHg w/ iCare @ 2pm

- **SLX:** (+) NaFl staining still present

- **Management:**
  - Alrex tapered OD
  - AMT inserted OD *(ProKera Slim™)*
Lens Inserted OD
AMT: What to expect...

- Mucoid discharge / debris present from membrane degradation – can *mimic* bacterial infection (antibiotic not necessary!)
- Healing can be assessed with NaFl
- IOP can be measured with a Tonopen
3 days after AMT removal

- **VA:**
  - 20/40-2 OD
  - 20/30-2 OS

- **IOP:** 14/18 w/ iCare @ 12:50 pm

- **SLX:**
  - Limbal linear opacities, (+) NaFl
8 weeks later

- **History:**
  - Pt still taking NPAT QID and Restasis BID
  - Pt notes vision is better, but still blurry

- **VA:**
  - 20/25+ OD
  - 20/20- OS

- **IOP:** 16/16 w/ iCare @ 3:30pm

- **Slit Lamp:**
  - OD: Mild sup linear limbal staining
8 weeks later

- Pt notes significantly better vision with contact lenses trialed in office (20/15)
- Ultimately patient was fit in semi-scleral lenses with good result
They said it was a migraine…. 

- 68 YO AF presented to after hours clinic w/severe pain and headache with blurred vision
- Recently visited Emergency Department for headache complaints
  - Was prescribed Rx analgesic without relief
  - Persistent headache, blur and today vomiting
They said it was a migraine....

- Ocular History & Medications:
  - Pt denied any ocular history prior to visit
  - Not taking any ocular medications

- NKMA

- Systemic History:
  - Recent visit to ER & diagnosis of Migraine
They said it was a migraine…. 

- Uncorrected visual acuity:
  - OD: 20/30
  - OS: 20/50

- Pupils, EOM, and Confrontation Fields:
  - Expected EOM and CF FTFC OD and OS
  - Mid-dilated OS pupil
They said it was a migraine….

- **Slit Lamp Examination:**
  - Corneal edema OS, poor view into A/C
  - Grade 3 redness 360 OS

- **IOP:**
  - Goldmann = 24 mmHg OD/ 48 mmHg OS

- **Gonioscopy:**
  - **Closed angle**, minimal structures and peripheral anterior synechiae consistent with CHRONIC ANGLE CLOSURE and ACUTE ANGLE CLOSURE CLOSURE at present
They said it was a migraine....

**In-office:**
- 2 drops Iopidine (separated over time)
- 1 drop Beta Blocker
- Waiting for IOP < 40 mmHg to instill Pilocarpine.....

**Oral Medications:**
- Carbonic Anhydrase Inhibitor (CAI) → Diamox (Provided to lower IOP, 2 x 250mg tablets)

**Ophthalmology consult**
- Due to findings of chronic disease and peripheral block, required trabeculoplasty (vs. LPI)
I keep getting pinkeye!

41 year old white female

- Presents with “stabbing pain” OD
  - Sudden onset previous evening
- At exam reported “bad migraine”, photophobia & mild nausea

- Ocular History:
  - High pressure in both eyes, poorly controlled with drops
I keep getting pinkeye!

- Was seen at prominent tertiary eye care center where she received “shots in the eye”
- Medical history: (+) arthritis (rheumatoid?)
  - Not currently under the care of a physician
  - Not currently medicated
- BMI: 39
- Visual Acuity: 20/20 OD and OS
“Pinkeye”

- **IOP:**
  - 22/23mmHg with lid holding, high apprehension

- **AC:**
  - Trace flare, no cells

- **DFE:**
  - Deferred – time constraints
  - X 3 visits!!

- **Undilated 90** (and eventual DFE) ➔ showed no posterior segment abnormalities
  - Vascular tortuosity but no arteriolar attenuation
“Pinkeye”

- Tentative diagnosis:
  - Mild scleritis vs. severe episcleritis with associated mild A/C reaction OU

- Treatment:
  - Durezol QID OU
“Pinkeye” – 2 day follow-up

- Signs and symptoms improved, But....
  - IOP 28/26 mmHg
- Quick taper of steroid
- Request systemic consultation
- Request earlier records
“Pinkeye” – 4 days later

- Signs & symptoms:
  - More severe than at initial presentation

- IOP:
  - 33/30mmHg

- Records received from prior episode....
“Pinkeye” – Recovered Hx

- Sclerouveitis OD → diagnosed 2010
  - Initially treated w/ sub-tenon’s steroid injection

- IOP:
  - 38/22mmHg at 2 day follow-up in 2010

- C/D ratio:
  - 0.2/0.2

- Oral CAI:
  → given in-office & prescribed for short-term therapy
“Pinkeye” – continued Hx

- In 2010, pt was recommended for further evaluation and .... lost to follow-up
“Pinkeye”

After review,

- “Exchanged” steroid, from Durezol to Lotemax
- Recommended further assessments

Systemic workup:

- Confirm RA (*recommend rheumatology consult*)
- (+) morbid obesity (*recommend nutritional consult*)
- (+) early COPD vs asthma (*recommend smoking cessation and pulmonology consult*)

Again: Lost to follow up
WHAT TO DO WITH THE PAIN…

Treatment considerations:

✧ Jabs reported that nearly 60% of scleritis patients require oral corticosteroids or immunosuppressive agents to control the disease
✧ Oral Steroids ~ 31.9%
✧ Systemic Immunosuppressive agents ~ 26.1%
Oral Analgesics: Tramadol

- **Schedule IV drug**: Used to treat moderate to severe pain
- Weak mu-opioid receptor agonist
  - Also induces serotonin release
- Inhibits the reuptake of norepinephrine
- Effectivity vs. potential side effects may not weigh in the patient’s favor
- Other options available
Other Oral Options for pain management: Tramadol – Schedule IV

**Aka Ultram**

- Available as 50mg capsule or 100, 150, 200, 300mg capsule
- Typical adult dose: 50-100mg q 4-6 h not to exceed 400 mg/day
- Recently moved from non-scheduled to Schedule IV
Other Oral Options for pain management: Hydrocodone – Schedule II

Available in combination with several other products

- **Combo With Acetaminophen** – *Vicodan, Lorcet, Lortab*
  - 2.5-10mg Hydrocodone
  - Available with 300+ mg acetaminophen
  - Dosed 2.5 – 10mg q4-6h PRN pain, not to exceed 60mg hydrocodone in 24 h

- **With Ibuprofen** – *Vicoprofen, Ibudone*

- **With Pseudoephedrine, Guaifenesin, Chlorfeniramine, Homatropine** – for cough suppression
Other Oral Options for pain management: Oxycodone– Schedule II

Aka Oxycontin

- 5, 10, 15, 20, 30mg tabs
- Other doses/formulations available for XR, abuse-deterrent, liquid
- Dosed 5-30mg q4-6 h
- High potential for abuse
Opioid Considerations

- CI in depression, severe respiratory depression
- Caution in chronic alcohol use, Addison’s disease, drug abuse history, impaired pulmonary function, psychosis, renal dysfunction, CV disease, hypotension
Oral Opioids: Tylenol 3

- 30mg codeine with 300mg acetaminophen
- Category III scheduled drug
- Usual dose is 1-2 tabs q4h

Uses:
- Severe trauma, abrasions, erosions
- Post-surgical pain
- Hydrops

Respiratory effect: Depresses Fxn
Oral Opioids: Tylenol 3

■ T3 Side Effects
  ■ Itching, rash, contact dermatitis
  ■ Delirium, seizures, cardiotoxicity
  → Avoid all other CNS Depressants including alcohol when using opiates of any form

■ T3 Contraindications
  ■ Substance abuse risk or history
  ■ Hypersensitivity to narcotics
  ■ Asthma, COPD
  ■ Kidney or liver dysfunction
Oral Opioids: Tylenol 4

- 60mg codeine with 300mg acetaminophen
- SCHEDULE 2 NARCOTIC

Uses:
- Severe trauma, abrasions, erosions
- Post-surgical pain
- Hydrops
In the blink of an eye…

41 year old female

- Complains of sudden onset, acute, intense pain
- OS only
- Started abruptly upon awakening this morning
Blink - History

- Several episodes of acute *ocular pain* upon awakening over years but none as severe as present visit

- Ocular Hx:
  - Multiple corneal diagnoses including:
    - EBMD
    - Forme fruste keratoconus
Blink - History

Medical Hx:
- Hypothyroidism; 125 mcg synthroid QD

Family Hx:
- (+) hypertension (M and F)
- (+) hypercholesterolemia (M and F)

Social history:
- Non-smoker, occasional alcohol and caffeine use
Blink – Exam Findings

■ Visual Acuity →
  ■ OD: 20/15 (plano)
  ■ OS: Reduced (unable to refract due to discomfort)

■ Keratometry:
  ■ OD: 47.25/48.75, mires clear and round
  ■ OS: Unable to perform due to edema, irregularity

■ Biomicroscopy:
  ■ OD: Fine, reticular/linear faint opacities in subepithelial layer, otherwise unremarkable
  ■ OS: (+)Edema, (+)Tr A/C cells and flare; See image
Blink - Management

- Pt intolerant to bandage soft contact lens

- Traditional pressure patch applied after instillation of:
  - 1 drop 1% Atropine
  - ½” ribbon bacitracin ung

- Advil 600-800 mg PRN pain q 4-6 h

- RTC 24 h
Blink - Management

- Medical management:
  - Continue bacitracin ung TID
  - Continue Advil PRN
- RTC 48 h to complete exam
- Upon resolution of RCE - OS
  - Visual Acuity: 20/15
  - Keratometry: 47.50/48.75
RCE - Considerations

- Pts w/ recurrent corneal erosions:
  - Chronically increased level of metallo-proteinase enzymes (specifically MMP 2 & 9)
  - These enzymes dissolve basement membrane and fibrils of the hemi-desmosomes
Long-Term Management

- Oral Doxycycline
  - 50 mg BID a day for 2 months
  - Concurrent topical corticosteroid TID, 2 to 3 weeks
  - Why?
    - Effects on metalloproteinase-9 activity by 70%
- Consider NaCl drops/ung long-term
- Bland ointment/gel qhs
- Nutritional support for associated dry eye
Blink – Long-Term Management

- “Surgical Intervention” considerations
  - Anterior Stromal puncture
  - PTK
    - Poor choice for this patient due to q/o forme fruste keratoconus & plano refraction
Blink -- 9-year data

- BSCVA
  - OD 20/30-
  - OS 20/15
- With Semi-Sclerals:
  - OD 20/15+
  - OS 20/15+
- Topography:
Options for pain management

Topical

- **NSAIDS** – block cyclooxygenase pathways leading to prostaglandin formation
  - Old generations: less penetration to posterior chamber
    - Acular LS QID
    - Voltaren TID
  - ‘Idiosyncratic’ risk of corneal melt might be the result of uncommon genetic collagen disorder adversely affected by cox enzyme inhibition
- **Newer generation**: Prolensa QD
Steroids - block most pain-mediating prostaglandin pathways

- Pred sodium phosphate (e.g. Inflamase Forte) penetrates poorly to AC as compared to Pred acetate (e.g. Pred Forte) but with similar side effects profile
Options for pain management: topical

- Site specific steroid: loteprednol
  - Reduces but does not eliminate risk of IOP increases & offers good surface anti-inflammatory
- Steroids reduce ability of cornea to regenerate – not a great choice for patients with increased collagenase activity
It burns....

- 73 YO male
- Painful, burning left eye x 3 weeks, especially superiorly
- Med Hx (& medications):
  - High cholesterol (Simvastatin)
  - HTN (atenolol)
  - (+) Skin cancer, removed 2007
  - (+) Triple bypass in 1993 (ASA daily)
It burns – Ocular history

- Retinal detachment OS, 2001
- Corneal ulcer OD, 2004
- Cataract extraction with AC IOL, 2001
- Allergic conjunctivitis (possible cat?), 2009
  - Chemosis OS>OD
  - Treated with FML QID
  - Did not return for follow up
It burns - Exam Findings

- **Uncorrected (distance) VA:**
  - 20/20 OD & OS

- **Pupils, EOM’s, CF:**
  - Within Normal Limits (WNL) OD & OS

- **Biomicroscopy**
  - OD: WNL with AC IOL
  - OS: See Image/Video
It burns - Assessment & Plan

- Multiple “FB” = eyelashes embedded in conjunctiva OS
  - Removed in office without incident
  - Rx Zylet QID for one week

- Possible Papilloma OS with symblepharon OS
  - Referred to ophthalmology for further evaluation / second opinion
Case History

- 57 year old white male

- Chief Complaint: Decreased vision for two days
  - “Sudden”, constant, distance more than near vision, worse when driving
  - Both eyes
  - *Chronic low-grade ocular pain*

- Secondary Complaint: Tinnitus
  - On and off for two years
  - (-) tingling, loss of consciousness, memory loss
Ocular and Medical History

- Ocular History and Medications
  - Unremarkable

- Medical History:
  - (+) Type II NIDDM, unknown BS and A1C levels
  - (+) Hypertension

- Medications
  - Metformin 500 mg BID & Lisinopril 20 mg QD

- Soc.Hx: (+) smoking, 1 pack per day for 20 yrs, caffeine 1 cup a day
Exam Results: Preliminary findings

- Best Corrected Visual Acuity:
  - OD: 20/60
  - OS: 20/80

- Pupils: Equal, Round, Reactive (direct & consensual)
- (-) RAPD

- Motility: Normal

- Confrontation Fields: FTFC OD and OS

- Color Vision: Fail OD and OS, unclassified pattern

- Blood Pressure: 124/82 RAS
**Exam Results:**

**Ocular Health Evaluation**

- **Slit Lamp Evaluation:**
  - Lids: crusting, debris, 1+ MGD, OU
  - Cornea: (+) *vertical striae* OU, debris in tear film OU, mild PEK inferior OS
  - Iris: (-) NVI OU
  - Lens: trace NS OD, 1+ NS OS with isolated vacuoles

- **Intraocular Pressure (IOP):**
  - 20 mm Hg OD and 21 mm Hg OS
Exam Results:
Ocular Health Evaluation

- Dilated Fundus Examination:
  - Optic Nerve: (-) NVD OU
    - OD: 0.05/0.05
    - OS: Minimal cupping
  - Macula: Flat, even and without pigmentary changes; (-)CSME
  - Posterior Pole OU: A/V nicking superior, A/V ratio = ½, (-) NVE

*See following images
(+) Arteriole attenuation, (-) CWS, (-) Hemorrhages, (-) Exudates
Exam Results: Posterior segment

Dilated Fundus Examination:

- **Peripheral Retina OU** – Flat and Intact 360 degrees, (+) Retinal hemorrhages – scattered, diffuse

- **Peripheral Retina OD** -- Blot hemorrhage temporal and isolated RPE hyperplasia sup-nasal

Image consistent with patient’s findings
Impression

Assessment:

1) Mild/Moderate peripheral retinal hemorrhages OU/decreased VA not explained by anterior segment findings today → suspected ocular ischemia

2) Diabetes w/ retinal hemorrhages → atypical presentation for “traditional” NPDR
   - peripheral without posterior pole
3) Progressive tinnitus
4) Moderate posterior blepharitis OU
5) Mild Cataracts OU → not responsible for VA
Plan:
- Additional in-office testing to rule-out other subtle etiologies of decreased vision
  - Corneal topography
  - OCT
  - Visual Field
Additional Testing In-Office:
Corneal topography- R/O irregular astigmatism

- Medmont results – mild insignificant irregularity
Additional Testing In-Office:
Posterior segment OCT of macula

- R/O maculopathy, VMT
Additional Testing In-Office: Humphrey Visual Fields

30-2 Sita Standard Examinations – Good Reliability, Severe Generalized Depression
Pt educated on the retinal findings and possible underlying systemic etiologies.

Due to significant nature of presentation and concurrent neurologic complaints → Patient referred immediately for:

- Carotid Doppler imaging
- Serology
- CT scan

Letter provided for PCP to assess FBS & hemoglobin A1C w/ additional serology
Referral and Results

- **Carotid Doppler Imaging:**
  - Right: Reduced flow with minimal plaque disease
  - Left: 100% blockage of left internal carotid with severe heterogeneous calcified plaque, no distal flow seen

- **CT Scan of Brain:**
  - Concurrent frontal lobe damage with left frontal encephalomalacia
  - Small focus of lacunar change left periventricular white matter
Follow-up Information

- RTC as scheduled for additional testing to evaluate level of ocular fxn damage and R/O further complications → Gonioscopy and VF testing

- UPDATED Medical History and Medications
  - Hypercholesterolemia – Lovastatin 10 mg QD
  - Thyroid Disease – Levothyroxin 50 Mcg QD
  - Baby Aspirin QD and Chantix (smoking cessation)

- Visual Acuity at Follow-up:
  - OD: 20/70
  - OS: 20/70

- Gonioscopy: (-) NVA, open in all quadrants OU
Findings:

- **ONH overall small diameter**
  - No additional findings consistent with VA or VF

- **Confirmed areas of NFL loss & decreased avg NFL thickness**

- “Sparing” of papillomacular bundles OD & OS may explain central “clear” zone on VF

Additional Testing In-Office:
OCT of ONH after confirmed OIS
Repeat visual field: follow up at six month mark

30-2 Sita Std Examinations – Overall good reliability, Severe Generalized depression with improved central island c/w OIS
Management and Follow-Up

Patient received Tx/Mx for systemic findings including increased systemic medical therapy & continue monitoring.

Additional Referrals:
- Low Vision Services
- Vascular Surgeon

Patient continued to be managed by primary care physician, endocrinology and frequent ocular examinations to monitor for additional complications (e.g. NVA).
Additional differential diagnoses for anterior segment-related pain

- Iatrogenic/medicamentosa-induced corneal damage
- Secondary angle closure
  - Eg, NVA associated with ischemia
- Shield Ulcer secondary to Vernal/Atopic conditions
- Infectious disease/MK
- Significant hypoxia, CLARE, etc
- Post-surgical irregularities
Posterior Segment/Neurological Conditions

- OIS
- MS
- AION/GCA
- Posterior scleritis
“Just in case”

- 90 year old female
- Presents with decreased vision
- c/o “reduced vision” OD, distance & near
- (+) Pain
- Denies photophobia
- (+) Headache – in scalp region
  - Persistent, not new ...but......
“Just in case” - History

- Medical history
  - (+) HTN
  - (+) gallstones (HCTZ and Advil)

- NKMA

- Ocular History
  - S/P cataract extraction OU

- Denies use of recreational drugs and alcohol
“Just in case” - Prelims

- BCVA: OD 20/25, OS 20/25
- Color vision: Intact and equal
- EOM: Full range of motion OU
- Pupils: Round/reactive OD and OS
- Confrontation Fields: FTFC OD and OS
"Just in case" - Exam

- Slit lamp:
  No pathology OD or OS
- Ta: 15 mmHg OD and OS
- DFE OD:
  See image
“Just in case” – VF
“Just in case” — Arteritic ischemic optic neuropathy

**Typical Symptoms -- Several:**
- Sudden, painless vision loss
- Non-progressive, initially unilateral but high risk of bilateral
- Simultaneous HA, jaw claudication, scalp tenderness, malaise, weight loss, fever, memory loss

**Typical Signs – Generally absent although…:**
- APD
- Severe vision loss
- PALE and SWOLLEN ONH
  - Often associated w/flame-shape heme
“Just in case” –
Arteritic ischemic optic neuropathy

- **Differential diagnosis:**
  - Non-arteritic ION
  - Inflammatory **papilliti**
  - Compressive optic nerve tumor,
  - Vascular occlusion: CRVO, CRAO

- **Serology:**
  - IMMEDIATE ESR & C-reactive protein
    - **MEN = 0.5 x age for norm**
    - **WOMEN = 0.5 x (age + 10) for norm**
  - Temporal artery biopsy even if blood work is normal if history consistent with GCA

- **Risk Factors:**
  - Expect pt >50 yrs
  - F>M
“Just in case” – Arteritic ischemic optic neuropathy

Treatment

- Start Prednisone STAT
- Temporal Artery Biopsy should be performed within 1 week after starting systemic steroids
  - Example: Methylprednisolone 250mg IV q6h for 12 doses in hospital then switch to oral pred 80-100mg po QD
- Treatment minimum time = 3-6 months
“Just in case” – What we did?

- **Our plan:** Referral to rule-out GCA... just in case
  - Age
  - Pain complaint
  - Visual “changes”
  - q/o altitudinal defect and ONH pallor

- Pt living temporarily in the country and so chose to delay management until travel back home...
<table>
<thead>
<tr>
<th></th>
<th>Arteritic AION</th>
<th>Non-Arteritic AION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean Age</strong></td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td>Female &gt; Male</td>
<td>Female = Male</td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td>Headache, scalp tenderness, jaw claudication, PMR, fever, malaise, weight loss</td>
<td>Pain rare</td>
</tr>
<tr>
<td><strong>Visual Acuity</strong></td>
<td>Up to 76% &lt; 20/200</td>
<td>Up to 61% &gt; 20/200</td>
</tr>
<tr>
<td><strong>Disc</strong></td>
<td>Pale &gt; Hyperemic edema, normal cup</td>
<td>Hyperemic &gt; Pale edema, small cup</td>
</tr>
<tr>
<td><strong>Mean ESR</strong></td>
<td>70</td>
<td>20-40</td>
</tr>
<tr>
<td><strong>IVFA</strong></td>
<td>Delayed choroidal &amp; optic nerve filling</td>
<td>Delayed optic nerve filling only</td>
</tr>
<tr>
<td><strong>Natural History</strong></td>
<td>Improvement rare, Fellow eye up to 95% without treatment</td>
<td>Improvement in up to 43%, Fellow eye &lt; 30%</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>Corticosteroids</td>
<td>None proven</td>
</tr>
</tbody>
</table>

Adapted from Yanoff 2004