GPC with Floppy Eyelid Syndrome and its Association with Sleep Apnea

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Disclosures: None

Learning Objectives: By the end of this lecture, attendees will be able to recognize signs of chronic allergic ocular inflammation, diagnose floppy eyelid syndrome and acquired lax eyelid syndrome, and initiate medical treatment and relevant surgical referrals.

Case Presentation

Initial Presentation

- A 37-year-old male presented to clinic with complaints of blurred vision with red and uncomfortable eyes. The right eye was described as more severe and had been worsening over the course of the last 2 months.
- Had been evaluated by primary care optometrist and switched contact lens brands from Acuvue Oasys for Astigmatism to Biofinity Toric with no improvement.
- He was wearing his contact lenses for 15 hours/day, 7 days per week.
- Denies sleeping in contact lenses or significant itching.

Entrance Testing

- CL DVA – OD: 20/20, OS: 20/20, OU: 20/20
- CL NVA – OD: –2, OS: –2, OU: –1
- Current OD: Biofinity Toric
  - OD: –1.75 –1.75 x 100
  - OS: –2.25 –1.75 x 100
- EDMS: Smooth and flat, no restrictions
- Pupils: EERRA
- VF: FFFC OD/OSS
- IOP – OD: 18 mmHg, OS: 18 mmHg (GAT)
- Manifest Refraction:
  - OD: –4.25 –2.50 x 027 20/20
  - OS: –4.25 –1.50 x 160 20/20

Initial Presentation cont.

- Ocular History: Myopia and Astigmatism
- Systemic Health: (+) Seasonal Allergies
- Current Medications: Clarity Daily
- Current Ocular Meds: Up and Up brand artificial tears
- No current alcohol or tobacco use
Slit Lamp

- Relevant Findings:
  - Lids: Giant papillae superior and inferior OD/OS
  - 1+ Diffuse bulbar injection OD and OS
  - 2+ SPK OD/OS, (-) keratic precipitates, (-) edema
  - Anterior chamber: Deep and Quiet
  - Lens: Clear OU

Differential Diagnosis

1. Giant Papillary Conjunctivitis
2. Chronic Allergic Conjunctivitis
3. Viral Conjunctivitis

GPC was the primary diagnosis secondary to presence of giant papillae, longstanding/worsening of condition, history of contact lens wear. Chronic allergic conjunctivitis was considered secondary to history of seasonal allergies, but the presence of giant papillae and lack of itching made this a lower tier differential diagnosis. Viral conjunctivitis was considered secondary to the bilateral presentation and diffuse bulbar injection, however the long course of symptoms made this a lower tier differential.

Plan

- Discontinue contact lenses until condition is resolved
- Switch to hydrogen peroxide-based cleaning solution once contact lenses are reinitiated
- Discussed use of OTC antihistamine/mast cell stabilizers
- Rx: Lotemax SM 0.38% gel 1 gtt TID OU
- Begin preservative-free artificial tears at least QID OU
- RTC 5 days for recheck

Subsequent Follow Ups

- Vision and IOP remained stable at follow ups
- Bulbar injection, giant papillae, and symptoms waxed and waned during this time.
- Notable changes to management:
  - Increased frequency of Lotemax SM to QID OU following continued symptoms at first few follow ups.
  - Started patient on allopurinol 0.2% BID OU. Patient had begun OTC antihistamine and Flonase.
  - Symptons improved with increased steroid frequency and during summer.
  - As steroid was gradually tapered off, symptoms worsened.

Persistent Symptoms?

- Atopic Conditions?
- Allergies?
- Floppy Eyelid Syndrome w/ Sleep Apnea
Persistent Symptoms?

• Atopic?
  • Patient has (+) Hx for asthma and seasonal symptoms lined up for ARC

• Allergic?
  • Seasonal pattern w/ waxing and waning symptoms
  • Patient treated w/ various anti–allergy meds including Pataday, Bepreve, and Pataday Extra Strength
  • Patient referred to allergist for testing – No strong positive reactions

Floppy Eyelid Syndrome w/ Sleep Apnea?

• Significant eyelid laxity was noted and patient referred to PCP for sleep study
  • (+) loud snoring
  • Patient was started on nighttime eye moisture mask and later taping eyelids closed at night with surgical tape secondary to suspicion for FES

Persistent Symptoms?

• Persistent Symptoms?
  • Floppy Eyelid Syndrome w/ Sleep Apnea?
  • Significant eyelid laxity was noted and patient referred to PCP for sleep study
  • (+) loud snoring
  • Patient was started on nighttime eye moisture mask and later taping eyelids closed at night with surgical tape secondary to suspicion for FES

Slit Lamp

• Significantly loose eyelid apposition OU
• 3-4+ diffuse bulbar injection OU
• 3-4+ giant papillae superior and inferior
• Trace SPK

Recent Follow Ups

• Lotemax Rx was substituted for prednisolone acetate 1% with improvement in symptoms.
  • Patient eye noticed gradual improvement in comfort, redness, and watering.
  • Vision and IOP stable
  • Bulbar injection improved
  • Giant Papillae: Improved papillary conjunctivitis
  • Current Tx: Prednisolone tapered to QD OU, preservative-free artificial tears Q2D OU, Pataday Extra Strength QOD OU, Genteal Drops QHS OU, and taping lids closed with medical tape.
  • Patient happy with current functional vision and comfort

Allergic Conjunctivitis

Giant Papillary Conjunctivitis (GPC)

• First described in 1974 by T.F. Spring.
• A form of ocular inflammation characterized by “giant” papillae on the superior tarsal conjunctiva.
  • Originally described as papillae >1.0 mm, more recently papillae 0.3 mm or larger are considered “giant”.
  • Caused by mechanical irritation of the superior tarsal conjunctiva. Most frequently associated with contact lens wear.
Giant Papillary Conjunctivitis

- Occurs more often in soft contact lens wearers. In one study, 83% of GPC patients wore soft lenses.
- Patients with allergies and atopic conditions typically show more severe signs/symptoms.
- 7.4% incidence in daily contact lens wearers compared with 36% in monthly replacement.
- Signs/Symptoms: itching, blurred vision, excessive mucus production, foreign body sensation, CL intolerance, decreased wearing time, presence of papillae 0.3 mm in superior tarsal conjunctiva.

Giant Papillary Conjunctivitis Stages

Stage 2: Mild: Increased mucus production, itching, contact lens awareness, and possible mild blurred vision. Mild hyperemia, thickening and injection of the conjunctiva, papillary reaction with some papillae > 0.3 mm.
Stage 3: Moderate: Itching, mucus formation w/ lens coating. Difficulty cleaning contact lens and increased contact lens awareness. Excessive lens movement and blurred vision. Marked injection and thinning of the conjunctiva with papillary reaction and subconjunctival scarring.
Stage 4: Severe: Complete contact lens intolerance, excessive movement of lenses, worsened mucus and tearing. Large (>1.0mm) papillae with fluorescein staining and subconjunctival scarring.

Vernal Keratoconjunctivitis (VKC)

- Recurrent bilateral disease associated with IgE and cell mediated immune mechanisms.
- Primarily associated with males, with an onset of age 5 and onwards.
- Cases have been present as early as 5 months and as late as 38 years.
- 90% have other atopic conditions and 95% show remission by late teens.
- Rare in temperate regions, but common in warm dry climates such as the Mediterranean, sub-Saharan Africa and the Middle East.

Signs/Symptoms

- Symptoms: Intense itching, tearing, photophobia, foreign body sensation, burning, rubbing eyes, mucus discharge, increased blinking
- Signs:
  - Conjunctival Hyperemia
  - Macropapillae > 1.0 mm with flat-topped cobblestone appearance
  - Gelatinous limbal conjunctival papillae often topped by white excrescences of eosinophils and epithelial cells (Horner-Trantas dots)
  - Superior punctate epithelial erosions
  - Plaques and “shield” ulcers form when exposed Bowman membrane becomes coated in mucus delaying re-epithelialization.
Atopic Keratoconjunctivitis (AKC)

• Rare, bilateral disease typically developing in adulthood (30-50 years) following long history of atopic dermatitis.2,3
• Asthma is common and 5% have suffered from VKC in the past.2
• Tends to be more chronic and remitting and often is worse in winter.2
• Ocular involvement between 25% to 42% in cases of atopic dermatitis at some point in life.8
• More serious complications and sight threatening in severe cases.

Signs/Symptoms

Symptoms: Similar to VKC, but tend to be from frequent, severe, and unremitting.2

Eyelids: Skin changes including eczema, erythema, dryness, scaling, and thickening. Chronic staph blepharitis and madarosis are common.2

Conjunctiva: Involvement is preferentially inferior, compared with superior in VKC.2 Smaller initial papillae, that can grow over time. Diffuse infiltration and scarring. Cicatricial changes and similar limbal involvement to VKC.

Cornea: corneal ulceration, persistent epithelial defects, and neovascularization.8 Major reason for visual decline in AKC patients.

Cataract: Shield-like anterior and posterior subcapsular cataracts, exacerbated by long term steroid therapy.

Increased risk for endophthalmitis during cataract surgery secondary to staph blepharitis

Epidemiology

Uncommon, unilateral or bilateral condition often overlooked as a cause of persistent ocular irritation.2,3

Incidence from 0.5 to 31.5% with a mean age of diagnosis of 52 years.9

Tends to affect middle-aged obese men, however up to 30% of cases are reported among women. Occasional reports in pediatric population.8

Pathogenesis

• Exact mechanism unknown, but chronic mechanical injury from eye rubbing or nocturnal eyelid eversion are theorized.2,3,10
• Patients typically have a history of sleeping face down with a preference to the more severe affected side.10
• Other theories include pressure-induced lid ischemia and systemic hypoventilation causing repertilating oxidation injury during sleep.10
• Degeneration of elastin fibers in the tarsal plate area present in FES patients. MMP-2, MMP-7 and MMP-9 aggregation in area of elastin degradation.10

Floppy Eyelid Syndrome

Uncommon unilateral or bilateral condition often overlooked as a cause of persistent ocular irritation.2,3

Incidence from 0.5 to 31.5% with a mean age of diagnosis of 52 years.9

Tends to affect middle-aged obese men, however up to 30% of cases are reported among women. Occasional reports in pediatric population.8
Signs/Symptoms

- Upper eyelid laxity with substantial loose upper lid skin. Rubbery consistency to tarsal plate. Eyelid is easy to evert and will sometimes evert spontaneously with gentle pressure.2,3,9
- Papillary conjunctivitis is common and can be severe
- Cornea: punctate keratopathy, filamentary keratitis, and superior vascularization.
- Other: Eyelash punctate, lacrimal gland prolapse, ectropia, aponeurotic ptosis

Obstructive Sleep Apnea (OSA)

- As far back as 1987, links between sleep apnea and floppy eyelid syndrome have been made.11
- Overall, increased prevalence of FES in cases of OSA (OR: 4.12) with more severe cases of OSA showing increased FES (OR: 10.65, 95% CI 4.62, 24.24 for mild, moderate, and severe respectively).9
- Cohort studies show a much higher rate of OSA in patients with FES. One study found 80% prevalence of OSA in patients diagnosed with FES.3
- Some evidence to suggest nighttime hypoxia may contribute to pathogenesis, however other research suggests correlation between cases.
- Patients with FES are more likely to have OSA, but patients with OSA still have a low probability of having FES.
- Hazard ratio of 2.24 for risk of death in patients with OSA. Referral for sleep study is important to rule-out disease.12

Treatments

- While floppy eyelid syndrome is most commonly associated with lid laxity, it has more recently been part of a subset of conditions known as “Acquired Lax Eyelid Syndrome”.12
- Acquired lax eyelid syndrome may be present in patients of normal BMI exhibiting chronic eyelid irritation without risk factors for OSA.13
- A case report of 5 patients treated with 4-eyelid lateral strip periosteal eyelid retraction found only 18% of patients whose weight was 90% of patients were normal weight and 2.5% underweight.12

Conclusions

- Floppy Eyelid Syndrome/Lax Eyelid Syndrome:
  - Sleep study with CPAP to rule out OSA
  - Corneal topography &/or evaluation between lax eyelid syndrome and keratoconus (likely due to eye rubbing)9
  - Weight loss suggestion for overweight patients
  - Uplifting, shielding, and lubrication at night
  - Referral to oculoplastic for surgical consult for lid tightening procedures including full-thickness wedge excision, upper lid lateral tarsal strip, medial canthal and lateral canthal plication and medial tarsal strip.9,10

Lax eyelids and allergic conjunctivitis are two distinct but often overlapping diseases that can be longstanding and greatly interfere with patient’s quality of life

Prompt diagnosis and recognition of environmental factors help to differentiate between diagnoses and guide treatment

Careful management and relevant referrals are important in managing patients for best ocular comfort, vision, and systemic health.
Sources

OD DIRECTED RE-EVALUATION OF RECURRENT ANTERIOR UVEITIS

Michelle Hammond, OD
Ocular Disease and Surgery Co-Management
Resident
Jonathan M. Wainwright VA Medical Center
Walla Walla, Washington
Pacific Cataract & Laser Institute
Kennewick, Washington

DISCLOSURES
The presenter and organizer for:
“OD directed re-evaluation of Recurrent anterior uveitis”

By Dr. Michelle Hammond has no financial relationship with any company or products mentioned in this presentation

COURSE OBJECTIVES

1. Review anterior uveitis pathophysiology
2. Identify clinical signs and utilize appropriate laboratory testing needed to develop an anterior uveitis care plan
3. Discuss current proposed criteria for the patient’s systemic disease association
4. Demonstrate the unique and vital role of ODs in anterior uveitis co-management

CASE STUDY

77-year-old Hispanic male
CC: Hazy and blurry vision OS>OD that started occurring 3 days prior to visit
Associated s/s: Foreign body sensation OS>OD, mild to mod light sensitivity
Denies pain, floaters, flashes, curtain veiling, and/or sudden vision loss
States mild overall fatigue and joint pain

OCULAR HISTORY
Bilateral non-granulomatous anterior uveitis, unknown etiology
Flare ups:
- Multiple episodes prior to 2013
- 06/04/2013
- 08/08/2014
- 07/25/2016
- 08/23/2017
- 09/04/2019
- 09/01/2020
- Ocular Hypertension OU (steroid responder)
- History of flash burns and chemical in eye (unsure of which one) ~1964
- CE OD 01/2014, CE OS 03/2020

MEDICAL AND MEDICATION HISTORY

Afib
Gout
Peripheral vascular disease
Diabetes
Hypertension
Hypothyroidism
Renal cysts

Congestive heart failure
Deep vein thrombosis
Chronic back pain
Headaches
Vertigo
Anxiety
Urinary

Alopurinol
Hydrochlorothiazide
Levothyroxine
Lisinopril
Metoprolol
Omeprazole
Rosuvastatin
Tobramycin
Tetracycline
Warfarin
Aspirin
PATIENT’S CURRENT LAB WORKUP

- RPR/HIV/Chest X-ray: wnl in 2004
- HLA-B27: neg 08/26/10
- CRP/ESR/ANA/RF: wnl 08/26/10
- CBC: wnl 01/09/13
- PT/PTT: wnl 01/09/13
- VDRL: neg 06/07/13
- Lyme titer: neg 06/07/13
- HLA-A29: neg 08/25/14
- HLA-DRB1*0102: neg 08/25/14
- HLA-B51: POS 08/25/14
- Varicella Zoster AB IgG: POS 07/25/16

SEPTEMBER 2020 EXAMINATION

ENTRANCE EXAMINATION:

- OD: 20/25-2, OS: 20/30+2
- IOPs: 17/14mmHg @ 1235
- Pupils: ERRL (-) APD

SLIT LAMP EXAMINATION:

- Old and New Keratic Precipitates OU (KPs)
- OD: (-) cells, tr-1 flare
- OS: tr cells, 2-2+ flare

TREATMENT AND MANAGEMENT

- Difluprednate ophthalmic emulsion 0.05% QID OU
- RTC in 3 days

Follow-up from initial exam

BCVA IOP (w/GAT) Slit Lamp Treatment and Management
3-Day OD: 20/20-1 OS: 20/25-2
18/19mmHg @ 0841
Endothelium: resolving KPs OS>OD
AC: OD: Deep & Quiet
OS: 1-2 cells

10-Day OD: 20/20-1 OS: 20/25-1
21/20mmHg @ 0906
Endothelium: resolving KPs OD>OS
AC: OD: rare cell OS: 1 cell

3-week BCVA OU:
20/20-1
23/23mmHg @ 0830
Endothelium: Tr KPs OD>OS
AC: OD: rare cell OS: 2+ cells

Increase Durezol 0.5% from BID to TID OU
Begin Brimonidine 0.2% BID OU

5-week OD: 20/20-2 OS: 20/20-1
21/22mmHg @ 0905
Endothelium: resolving KPs OD>OS
AC: OD: 1 cells OS: tr cells

Taper Durezol 0.5% to BID OU and continue Brimonidine BID OU

2-month OU: 20/20-2
29/26mmHg @ 0904
After instillation of Brimonidine OU in office
24/23 @ 0933
Endothelium: 1+ central fine KPs OD>OS
AC: OU: rare-1 cells

Taper Durezol 0.5% from BID to qAM. Continue Brimonidine BID OU.
RTC in 2 days due to elevated IOP

2 month + 2 day OU:
20/20-1
24/22mmHg @ 1239
Endothelium: 1+ central fine KPs OD>OS
AC: OU: rare-1 cells

Durezol 0.5% qDay and Brimonidine BID OU

2.5 month OU:
20/20-1
20/20mmHg @ 1246
Endothelium: Tr fine KPs OD>OS
AC: OU: rare cell OD/OS
Discontinue Durezol 0.5% qDay and start taper with Pred acetate 1.0% BID OU.
Continue Brimonidine BID OU.

3 month OU:
20/20-1
19/19mmHg @ 1236
Endothelium: (-) cells/flare OU
AC: (-) cells/flare OU
Prophylactic Pred Acetate 1% qDay and Brimonidine BID OU

4.5 month OD:
20/25-2 OS: 20/25+1
29/24mmHg @ 1350
Endothelium: clear OU
AC: (-) cells/flare OU
Discontinue prophylactic Pred Acetate 1% qDay OU and Brimonidine BID OU.

**DIAGNOSTICS ORDERED**

Ordered HLA-A and HLA-B genotype panels on 10/30/2021. Results performed by UHC Histocompatibility and Immunogenetic in Salt Lake City, Utah and received 11/09/2020.

- Positive for 51:07
- Marker for Behçet’s
- Associated but not diagnostic
- 6-fold increased risk for Behçet’s with +B51 marker

**ANTERIOR UVEITIS EPIDEMIOLOGY AND PATHOPHYSIOLOGY**

**EPIDEMIOLOGY OF UVEITIS**

- Global incidence of uveitis is 14-17 cases per 100,000 with 38,000 new cases confirmed each year in the USA
- Commonly seen between decades 20-50
- 50% of cases are idiopathic, with 30% of cases being HLA-B27 related
- Cause of 10% of legal blindness cases in the US

**PATHOPHYSIOLOGY OF ANTERIOR UVEITIS**

Anterior uveitis is the inflammation of the anterior portion of the uveal tract causing a breakdown of the blood-aqueous barrier.

Anterior Uveitis can be:
1) Granulomatous
2) Non-granulomatous

Multiple etiologies: idiopathic, inflammatory, infectious, injuries, inherited, ischemic, and iatrogenic

**CLINICAL FINDINGS AND TREATMENT**

**SYMPTOMS OF ANTERIOR UVEITIS**

- Blurred vision
-Photophobia
- Acute or chronic pain
-Dark spots within vision (floaters)
CLINICAL FINDINGS OF ANTERIOR UVEITIS

- Peribulbar vessel engorgement of the conjunctival and episcleral vasculature and/or diffuse injections
- Cells within the anterior chamber as a result of inflammatory cellular infiltration
- Flare in the AC due to influx of proteins
- Non-granulomatous KPs vs Granulomatous KPs
- Hypopyon formation
- Posterior synechia or anterior synechia
- Elevated or decreased IOP
- Inflammatory nodules
- Band keratopathy

TREATMENT OF ANTERIOR UVEITIS

- Initial treatment of anterior uveitis typically involves topical corticosteroids
- Cycloplegia for pain and prevention of synechiae formation
- Anti-VEGFR if herpetic etiology is suspect
- IOP lowering medication
- Oral steroids
- Immunosuppressants

BEHCET'S RELATED ANTERIOR UVEITIS

- 50% of cases have uveitis
- 80% are bilateral
- Acute, recurrent, non-granulomatous panuveitis, associated with extensive necrotizing retinal vasculitis and blindness
- Hypopyon in 25-30% of cases
- Not rare to encounter an isolated involvement of anterior uveitis

TWO ESTABLISHED CRITERIA FOR BEHCET’S

<table>
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<tr>
<th>Major Criteria</th>
<th>Minor Criteria</th>
<th>Types of Behcet’s Disease</th>
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</thead>
<tbody>
<tr>
<td>- Recurrent oral ulcers</td>
<td>- Arthritis</td>
<td>Complete (4 major)</td>
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<tr>
<td>- Recurrent genital sores</td>
<td>- Genitourinary symptoms</td>
<td>Incomplete (3 major or ocular involvement + 1 other major criteria)</td>
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<td>- Vascular manifestations</td>
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OD ROLE IN CO-MANAGEMENT

STEP WISE APPROACH TO PROPER DIAGNOSIS OF UVEITIS

1) Etiology
2) Acute vs Chronic vs Recurring
3) Granulomatous or non-granulomatous
4) Laterality
5) Clinical features/findings

LABORATORY TESTING

CURRENT UPDATE REGARDING PATIENT

Understanding the presenting clinical signs and symptoms of anterior uveitis, can help ODs effectively change anterior uveitis and collaborate on individualistic treatment and management approach for each patient.

By making more appropriate diagnosis based on thorough review of systems, understanding systemic disease processes, and ordering proper laboratory testing, ODs can help lead the way to better patient outcomes and collaboration with referring providers.

CONCLUSION

SPECIAL THANKS

Doctors of Jonathan M. Wainwright VA Medical Center
- Dr. Jennifer Melsness
- Dr. Jonathan Haley
- Dr. Justin Roberts

Doctors of Pacific Cataract & Laser Institute
- Dr. Aaron Brannon
- Dr. Drew Aldrich
- Dr. Kerri Norris
REFERENCES


• https://www.reviewofoptometry.com/article/the-many-moods-of-uveitis

• https://www.reviewofoptometry.com/article/practical-pearls-for-managing-anterior-uveitis
Discussion and case reports of neurosyphilis and Lyme panuveitis. The presentation will review etiology, work up, and subsequent treatment. Additional highlights will include public health updates surrounding these diseases.

**DISCLOSURE**

- None

**CASE 1**

- CC: 50-year-old white male, emergency visit:
  - The patient states his right eye has been turning "bloodshot" over the last three weeks. He has had foreign body sensation in the eye and fluctuating pain since his dry eye visit 3 and a half weeks ago. He has photo documented the level of redness and proceeds to show photos on his phone. Additionally, his vision began to decline 3 weeks ago. Today he says the pain is not as bad as it has been and is around a 6/10 with significant light sensitivity.
  - LEE: 1 month ago at Lebanon VAMC for dry eye
  - Ocular Medications: Polytrim ointment TID OU, Systane QID OU

**MEDICAL HISTORY**

- Hyperlipidemia
- Acute pancreatitis
- Chronic rhinitis

**OCULAR HISTORY**

- Presbyopia/refractive error OU
- Trace cataract OU
- Corneal abrasion OD 2008
- Severe dry eye OU
- Blepharitis

**SOCIAL HISTORY**

- + smoking: 1-2 packs daily
- + alcohol
- -drugs

**MEDICATIONS**

- Atorvastatin 20mg QD PO
- Tramadol PRN PO
- Flonase PRN

**ENTRANCE TESTING**

- VA with Habitual Glasses
  - OD 20/200 PH 20/100
  - OS 20/25
- EOM: full and smooth OU
- CVP: FTFC OU
- Pupils: Fixed pupil 5mm OD, normal response with direct/consensual OS

**BIOMICROSCOPY**

- OD: Adnexa: without defect
  - Lids/Lashes: trace flakes, Meibomian gland stasis
  - Sal/syr: 2+ vitreous injection with prominent perilimbal injection
  - Inferior palpebral conjunctiva >10 concretions
  - Cornea: Ectodermal with diffuse pigment on-ends
  - Ant Chamber: 2+ with 2+ flare
  - Iris: Flat, 3+ posterior synechias around iris ruff (prominent blood vessels due to light irises with venous dilation)
  - Angles: 2
  - Lens: 1+ NS with significant anterior lens pigment and scattered pigment on posterior lens

- OS: Adnexa: without defect
  - Lids/Lashes: trace flakes, Meibomian gland stasis
  - Sal/syr: 2+ vitreous injection, inferior palpebral conjunctiva >10 concretions
  - Cornea: clear
  - Ant Chamber: deep and quiet
  - Iris: Flat w/ tears (prominent blood vessels due to light irises)
  - Angles: 2
  - Lens: 1+ NS
BREAKING SYNECHIA

DILATION:
- 1 gtt tropicamide 1%, 1 gtt phenylephrine 2.5% OU @10:17, 1 gtt cyclopentolate 1% OD @11:12
  *by 11:35 the patient had remaining synechia at 2 o’clock and 7 o’clock causing the mild correctopia*
- Atropine 1% vs Cyclopentolate 1%
- Homatropine is no longer readily available
- Phenylephrine 5% or 10%

FUNDUS EXAM

IOP: OD 9 mmHg 10:07
- OD: poor visibility
- Nerve: c/d 0.5/0.5, no apparent edema
- Macula: grossly intact
- Vessels: intact without hemorrhage
- Posterior Pole: grossly intact
- Periphery: grossly intact
- Vitreous: 2+ dense vitreous cells with vitreous haze
  *no apparent hemorrhage, choroidopathy etc*

IOP: OS 13mmHg 10:07
- OS: clear view
- Nerve: c/d 0.5/0.5, pink and distinct borders
- Macula: flat and intact
- Vessels: 2/3 A/V
- Posterior Pole: unremarkable
- Periphery: flat and intact 360 (-) holes/tears
- Vitreous: clear

ADDITIONAL TESTING: OPTOS

ADDITIONAL TESTING: MACULAR OCT

What is our diagnosis and what is our next step?...

BUT WAIT!
ALL GOOD THINGS COME IN PAIRS.....TIME TO INTRODUCE CASE #2

CASE 2
- CC: 70-year-old white male with severe vision decrease, red painful eye with photophobia OS over the last 3-4 weeks
- SECONDARY CC: Large floater like a blob that moves in and out of central vision which started and has worsened over the last month.
- TERTIARY CC: Headache in the temporal area next to his left eye starting recently, fatigue, and persistent sore throat.
  - With further probing he states his whole body had a skin rash around a month ago.
MEDICAL HISTORY
- Coronary Artery disease s/p stent
- Herpes Genitalis
- Depression
- HIV: compliant with therapy

OCULAR HISTORY
- Presbyopia/refractive error OU
- Mixed age related cataracts OU
- Blepharitis OU
- Choroidal Nevus OS

MEDICATIONS
- Valcyclovir 500mg 1 tablet BID PO
- Baby Aspirin QAM PO
- Bitarvy 1 tablet BID PH
- Fluoxetine 20mg BID PO
- Sildenefil 50mg PRN PO
- Lisinopril 10mg QD PO
- Simvastatin 10mg QD PO

ENTRANCE TESTING
- VA
  - OD 20/25-3
  - OS 5/200 PHNI
- EOM: full and smooth OU
- CVF: FTFC OU
- Pupils: PERRL (-) RAPD

OCULAR HISTORY
OD:
- Adnexa: without defect
- Lids/Lashes: dermatochalasis, capped glands, thickened margins
- Scl/cnj: Trace inj
- Cornea: clear
- Ant Chamber: D4Q
- Ite: Flat without tears
- Angles: 3
- Lens: 1+HS w/ central ACC and 1+ PSC in visual axis

OS:
- Adnexa: without defect
- Lids/Lashes: dermatochalasis, capped glands, thickened margins
- Scl/cnj: diffuse 2+ inj greatest sup, worse circumlimbal (blanches with phenyl)
- Cornea: mild endo folds/stromal edema
- Ant Chamber: 1+ cells
- Ite: Flat (+) NVI sup>inf OS
- Angles: 3
- Lens: 3+HS

BIOMICROSCOPY
OD:
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- Lids/Lashes: dermatochalasis, capped glands, thickened margins
- Scl/cnj: Trace inj
- Cornea: clear
- Ant Chamber: D4Q
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- Ite: Flat (+) NVI sup>inf OS
- Angles: 3
- Lens: 3+HS

FUNDUS EXAM
IOP: OD 18mmHg @ 9:57am
OD: Mild haze
- Nerve: D/D 0.4/0.4, pink and distinct borders
- Macula: flat and intact
- Vessels: 2/3 A/V
- Posterior Pole: without defect
- Periphery: flat and intact 360 (-) holes/tears
- Vitreous: syneresis vs trace cell

IOP: OS 21 mmHg @ 9:57am
OS: Obstructed views due to 3+ cells in the vitreous and large dense floater covering all of posterior pole

ADDITIONAL TESTING
- B-scan: Large, undulating vitreous debris OS. Retina attached. No signs of a mass.

AND NOW....STOP AND EVALUATE
- What is our preliminary diagnosis and differentials in these cases?
**STEP #1: TREATMENT**

**Steroids:** To calm inflammatory response.
- Prednisolone Acetate 1% QID to Q1H vs Difluprednate 0.05% BID to 6 times daily
- Intravitreal injection

**Mydriatic:** To improve comfort and iris mobility.
- Atropine 1% or cyclopentolate 1-2% BID-TID
- Homatropine is the gold standard, but is often not available.

**IOP Lowering Medications:** To reduce possibly damaging IOP.
- Fast acting such as timolol, brimonidine, dorzolamide
- Anti-VEGF: To manage retinal edema or abnormal vascular growth.

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**STEP #2: LAB TESTING**

**GET AN EXTENSIVE REVIEW OF SYSTEMS**
- History of oral or genital ulcers
- Tinnitus or hearing loss
- Headache
- Malaise
- Chronic cough
- Shortness of breath
- Recent weight loss or gain
- Fever, chills, or night sweats
- Recent contact with individuals with known tubercular disease
- Diarrhea or blood in the stool
- Skin rashes, oral mucous (sores)
- Arthritis
- High-risk sexual activities
- Ingestion of game meats
- Undercooked meats or tainted water
- Presence of pets
- Insect bites
- Recent foreign travel

---

**CONSIDER WHAT IS THE MOST COMMON CAUSE BY AGE**

<table>
<thead>
<tr>
<th>Type</th>
<th>Primary Site of Inflammation</th>
<th>Include</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior Uveitis</td>
<td>Anterior Chamber</td>
<td>Iris, Anterior ciliary body, Iris neovascularization</td>
</tr>
<tr>
<td>Intermediate Uveitis</td>
<td>Vitreous</td>
<td>Panuveitis, Macular edema, Neovascularization retina</td>
</tr>
<tr>
<td>Posterior Uveitis</td>
<td>Retina or Choroid</td>
<td>Focal, multifocal, or diffuse choroiditis, Retinal vein occlusion, Retinopathy</td>
</tr>
<tr>
<td>Panuveitis</td>
<td>Anterior chamber, vitreous, and retina or choroid</td>
<td></td>
</tr>
</tbody>
</table>

*Use SUN (Standardized of Nomenclature, 2005) for classification & description*

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**THEN ORDER THE LABS**

- Tuberculosis: T-Spot
- Syphilis: FTA Ab, VDRL, RPR
- Lyme: Ab total and Ab IgM
- Sarcoidosis: ACE
- Herpes: HSV and Vancella Zoster
- Spondyloarthopathies: HLA-B27
- Rheumatoid Arthritis: RF
- Lupus: Antinuclear ABS IFA
- Cytomegalovirus: CMV ab
- Toxoplasmosis: toxoplasma ab
- Cat Scratch: Bartonella Quintana/Henselae
- Additional testing: CBC
- Metabolic panel
- ESR
- CRP
- IgG and IGM
**RESULTS: CASE #1**

**Positive Lyme**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Ref Range</th>
<th>Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>IgM</td>
<td>1.32</td>
<td>0.00-0.79</td>
<td>&gt;1.19</td>
</tr>
</tbody>
</table>

**INTERPRETATION:**
- IgM levels may peak at 3-6 weeks post infection then gradually decline.
- Borrelia-Specific Bands: 18, 23, 28, 30, 39, 41, 45, 58, 66, 93
- False Positive: periodontal disease, leprospirosis, relapsing fever, yaws and pinta, Rheumatoid arthritis, systemic lupus erythematosus, other infections (e.g., measles, Epstein-Barr virus, cytomegalovirus, and other spirochetal diseases).

Test Result
- P18 IGG AB Absent
- P93 IGG AB Absent
- P66 IGG AB Absent
- P58 IGG AB Absent
- P45 IGG AB Absent
- P41 IGG AB Absent (@1 month pos)
- P39 IGG AB Absent
- P30 IGG AB Absent
- P28 IGG AB Absent
- P23 IGG AB Absent

LYME IGG/WB INTERP NEGATIVE

**Test Result**
- P41 IGM ab PRESENT
- P39 IGM AB ABSENT
- P23 IGM AB PRESENT

LYME IGM/WB INTERP POSITIVE

---

**SO WHAT DOES THE CDC SAY IS POSITIVE?**

- An equivocal or positive EIA result followed by a NEGATIVE line blot result is considered NEGATIVE.
- An equivocal or positive EIA result followed by a POSITIVE line blot result is considered POSITIVE.

---

**LAB RESULTS CASE #1: CONTINUED**

**TEST**  
**RESULT**

HLA-B27: Positive

**INTERPRETATION:** Looks at B27:06 and B27:09 alleles and is not fully diagnostic.

Remember, diagnosis cannot be made off lab testing alone. Further imaging and physical examination are required.

---

**REFERRAL AND CONSULT: CASE #1 CONTINUED**

**Rheumatology:**
- Known lower back pain since his 20s.
- Degeneration of L4-L5.
- Abnormal Schober test.
- MRI shows abnormal SI.

DX: Likely ankylosing spondylitis

TX: Trial anti-TNF inhibitor (Humira).

---

**DEFINITIVE IMAGING**

- **1 WEEK Follow Up** VA 20/50
- **2 WEEK Follow Up** VA 20/50
- **3 WEEK Follow Up** VA 20/50

---

**STEP #3: REFERRAL AND CONSULT: CASE #1**

**Infectious Disease:**
- Positive result of IgM western blot testing with known previous negative in 2019
- Uveitis with possible retinal involvement
- Resides in an endemic area and has known exposure to ticks without recall of a rash or bite.
- No CNS symptoms.

**However results are not entirely conclusive and should be reviewed with the clinician as it is a rare finding associated with the disease and the positive test results are mild.**

DX: Active Lyme Disease without CNS involvement

TX: Recommends continuing Doxycycline 100Mg BID x 30 days.

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**UVEITIS IMPROVEMENT**

1 WEEK Follow Up VA 20/50
3 WEEK Follow Up VA 20/30
PUBLIC HEALTH CONSIDERATION

- Cases have been on the rise since the 1980s and are still greatly under reported due to the multi-discipline approach to treatment and the readily accessible use of doxycycline.
- Although patients with Lyme disease can experience lasting effect, it must correlate with damage from the acute phase of the disease.
- Not all damage is related to *Borrelia burgdorferi*. Additional parasites, such as *Ehrlichia* and *Babesia*, are carried by ticks and can be the root of acute and long-term effects.
- There is significant debate in the infectious disease and medical community on whether post-treatment Lyme disease syndrome should be considered a medical diagnosis.

SO WHAT ABOUT CASE #2.... OS VA 5/200 WITH SORE THROAT, PREVIOUS RASH, HIV, ETC?

LAB RESULTS CASE #2

<table>
<thead>
<tr>
<th>TEST</th>
<th>RESULT</th>
<th>REFERENCE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPR</td>
<td>1:128</td>
<td></td>
</tr>
<tr>
<td>Syphilis AB</td>
<td>Positive</td>
<td>Positive: DA and Line blot</td>
</tr>
<tr>
<td>VDRL</td>
<td>1:8</td>
<td>&gt;1:1 Negative</td>
</tr>
<tr>
<td>CD4</td>
<td>344</td>
<td>200-400 = HIV; 500-1500 = above HIV range</td>
</tr>
<tr>
<td>Viral Load</td>
<td>&lt;20</td>
<td></td>
</tr>
<tr>
<td>Lumbosacral Puncture</td>
<td>99 fluid nucleated cells, 93% monocytes, 7% neutrophils</td>
<td>0-5 WBC</td>
</tr>
</tbody>
</table>

INTERPRETATION: Highly positive active syphilis

LYME DISEASE

- Lyme disease is a multi-systemic infection caused by a spiral-shaped bacterium, or spirochete, called *Borrelia burgdorferi*.
- Less than 50% of people recall having a tick bite or rash

CASE #2: REFER AND CONSULT

STEP #3:

Retinal Specialist:
- Repeated previous testing with the additional appearance of retinal whitening/plaque OS.
- Began treatment with Durezol QID OD, 6 times daily OS, and atropine BID.
- Sent to ED to begin treatment with IV PCN and coordinated with Lebanon Optometry VAMC for follow up testing and care.

Infectious Disease:
- Ordered additional labs, imaging, performed physical exam, culture, treatment recommendations, and contact tracing.
- Coordinated follow up and monitoring of neurological symptoms.

DX: Active Ocular Syphilis and Neurendymitis
Tx: Began on IV PCN 4 million units every 4 hours
Anterior Segment Photos: 10 DAY FOLLOW UP

Optos: DAY 10 Follow Up: VA OD 20/30- OS 5/200

OCT: 10 DAY FOLLOW UP SHOWING VITREAL DEBRIS

UVEITIS IMPROVEMENT CASE 2: SYPHILIS

RETINITIS IMPROVEMENT: OS

FINAL OUTCOME 2.5 MONTHS FOLLOW UP: VA 20/30

**VA LIMITED BY CATARACT AND DRYNESS**
Syphilis is a sexually transmitted infection caused by a bacteria called Treponema Pallidum. There are four stages of syphilis:

- Primary
- Secondary
- Latent
- Tertiary

Neurosyphilis can occur at ANY stage of infection.

Syphilis is highly opportunistic and can often occur in patients with HIV or immunocompromised states.

In 2019, 129,813 cases of syphilis were reported. There was an 11% increase in overall cases between 2018-2019. There was a 30% increase in female cases during 2018-2019 highlighting the emerging heterosexual epidemic. Congenital syphilis cases have increased 3x since 2015 to >1,500 cases.

Rising numbers are due to continued improvements in prophylactic medication for treatment/prevention of STDs and HIV. The increased feeling of security has also increased risqué behavior, such as lack of sexual protection and number of partners.

Patients have greater access to multiple sexual partners with new dating/hook up applications.

There is a growing acceptance of all sexual orientations in society making it easier to meet potential partners.

When handling panuveitis in your clinic always remember the steps:

1. Treatment
2. Lab Testing
3. Consult/Refer

Infectious disease is not as rare as you think. Continue to follow CDC guidelines and keep up to date on current data.