THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

2025 Ohio Ophthalmological Society Annual Meeting

Reece Bergstrom, DO

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Financial Disclosures

- None

Goals

- Background on Uveitis
- Describe Common Clinical Cases of Uveitis in Clinic
- Immunosuppression Therapies for Uveitis

Uvea and Uveitis

- Uveal tract is a highly vascular, heavily pigmented layer comprising of three regions each with a distinct appearance and function: Iris, Ciliary Body, and Choroid

- It is derived from neuroectoderm and mesoderm; the neuroectodermal optic cup forms the epithelial layers of the ciliary body and iris and the sphincter and dilatory pupilae muscles.

- The mesoderm forms the uveal vasculature stroma and ciliary muscles

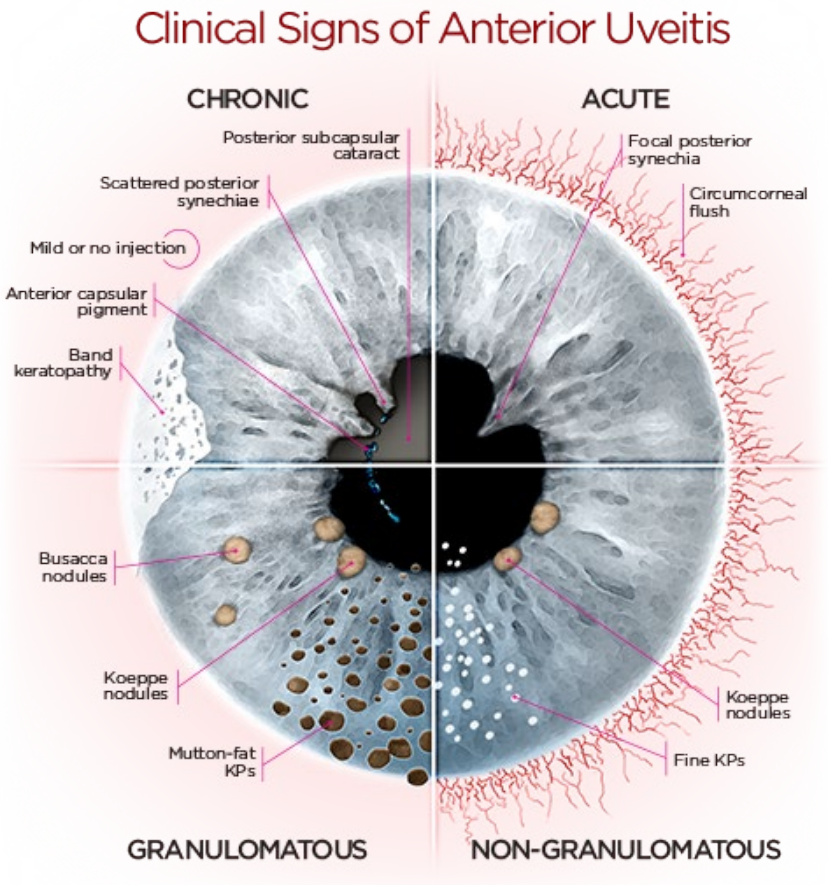
Uvea and Uveitis

- Blood-Ocular Barrier- effective cellular barrier to the movement of macromolecules between the intravascular space and the intraocular compartment.
- Breakdown of this barrier is common accompaniment to uveitis
- Chronic inflammation can lead to breakdown of layers leading to chronic flare or retinal vasculitis/leakage

History

- Every patient needs to have a review of their general health

- Causes: Autoimmune, Infectious, Oncologic, Traumatic, **Idiopathic (~50% of patients)**



History

- - **POSITIVE (in bold)** - recent weight loss/gain, fevers/chills, night sweats, fatigue, generalized weakness, easy bruising/bleeding, tremor, intolerance to heat or cold, raynaud's, sicca symptoms, nasal ulcers, oral ulcer, cold sores, genital ulcers, sinusitis, nose bleeds, difficulty swallowing, chest pain, shortness of breath, wheezing, cough, blood in sputum, nausea, vomiting, abdominal pain, diarrhea, changes in bowel or bladder patterns, change in urine, weakness/numbness/tingling of limbs/digits, muscle pain, joint aches/pains, rash, hives, sun sensitivity, hair loss, skin discoloration, headache, dizziness, seizure, tinnitus, hearing loss, depression, anxiety, enlarged lymph nodes, tattoos/inflammation of tattoos.

- Family History:
- Occupation:
- Eating habits:
- Tobacco:
- Alcohol Use:
- Drug use:
- Pets/animals:
- Foreign travel:
- STDs:
- Marital status:
- Incarceration:
- Heritage:
- Miscarriages:
- Recent Sick Contacts:
- Health otherwise:

Identification and Naming (SUN criteria)

Table 1: Anatomical classification of uveitis based on Standardization of Uveitis Nomenclature (SUN) for reporting clinical data.

Type	Primary site of inflammation*	Manifest conditions include
Anterior uveitis	Inflammation of the anterior chamber, affecting the iris and anterior ciliary body	• Iritis • Iridocyclitis • Anterior cyclitis
Intermediate uveitis	Inflammation of the vitreous	• Pars planitis • Posterior cyclitis • Hyalitis
Posterior uveitis	Inflammation of the retina or choroid	• Focal or diffuse choroiditis • Chorioretinitis • Retinochoroiditis • Retinitis • Neuroretinitis • Retinal vasculitis
Panuveitis	Inflammation of the anterior chamber, vitreous and retina or choroid	

** Determined clinically.*

Table 5-2 Descriptors of Uveitis Based on Standardization of Uveitis Nomenclature (SUN) Criteria

Category	Descriptor	Comment
Onset	Sudden	
	Insidious	
Duration	Limited	≤3 months' duration
	Persistent	>3 months' duration
Course	Acute	Episode characterized by sudden onset and limited duration
	Recurrent	Repeated episodes separated by periods of inactivity without treatment ≥3 months' duration
	Chronic	Persistent uveitis with relapse in <3 months after discontinuing treatment

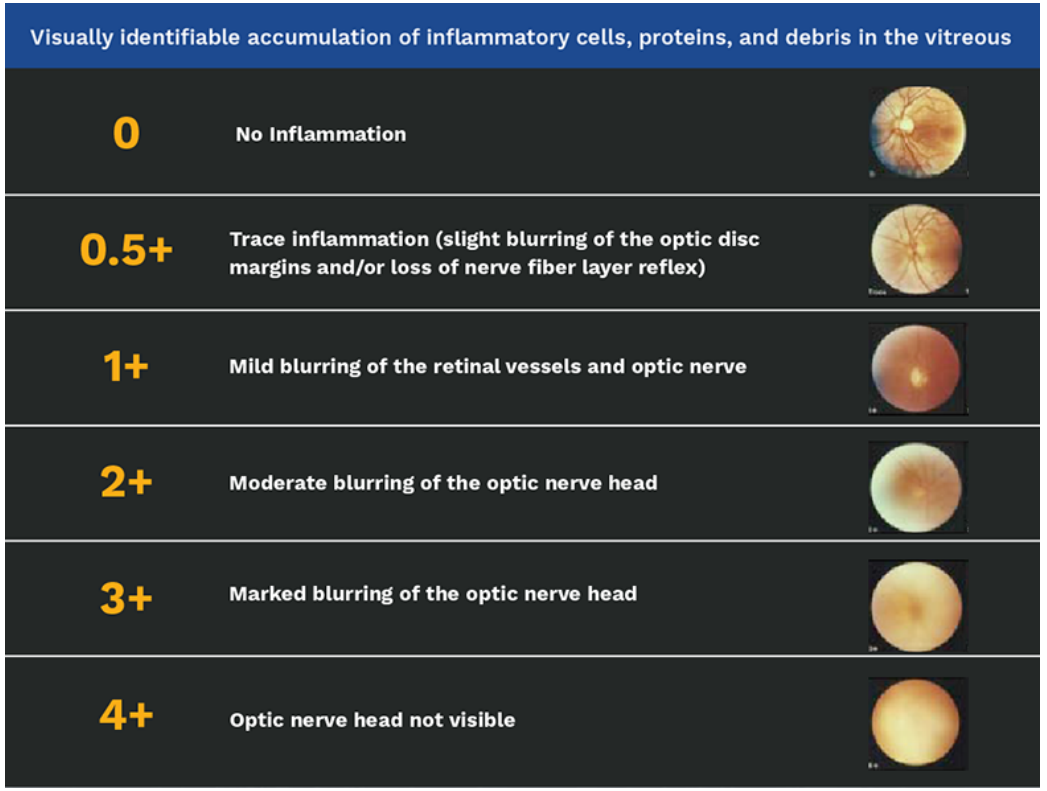
Reprinted with permission from Jabs DA, Nussenblatt RB, Rosenbaum JT; Standardization of Uveitis Nomenclature (SUN) Working Group. Standardization of nomenclature for reporting clinical data. Results of the First International Workshop. *Am J Ophthalmol.* 2005;140(3):511.

Identification and Naming (SUN criteria)

Table 4: Grading of anterior chamber flare and AC cells (SUN Workshop).

Grade/description of AC Flare	Grade of AC cells	Cells in field*
0- None	0-	<1
	0.5+	1-5
1+ Faint	1+	6-15
2+ Moderate (iris and lens details clear)	2+	16-25
3+ Marked (iris and lens details hazy)	3+	26-50
4+ Intense (fixed and plastic aqueous)	4+	50+

**Field size is a 1x1mm slit beam.*



Identification and Naming (SUN criteria)

- Cystoid Macular Edema (CME), Retinal Vasculitis, Optic Disc Edema
- These criteria do not make Posterior Uveitis

Case 1

- 48 year old male with Acute Recurrent Anterior Unilateral Uveitis Left Eye
  - 7 day history of redness, pain, photophobia, tearing, burning, and blurred vision
  - Cyclical episodes occurring ~2 times a year and usually subsides on its own in a few days
  - Seen by outside provider and started on prednisolone 6 times a day for 4+ cell

Was 6 times a day enough for 4+ anterior Cell?

Cell	Prednisolone Drop
Trace	BID
1+	QID
2+	Q 2 hours while awake
3-4+	Q 1 hour while awake

History

POH/Ocular Sx

Lasik

Meds

None

Social Hx

Smoker 1 pack per day

PMH/PSH

Type II diabetes
Deviated Septum
Oral Surgery

FHx

No pertinent

ROS

Lower Back Pain, Tingling and Numbness of fingers, Depression

Exam

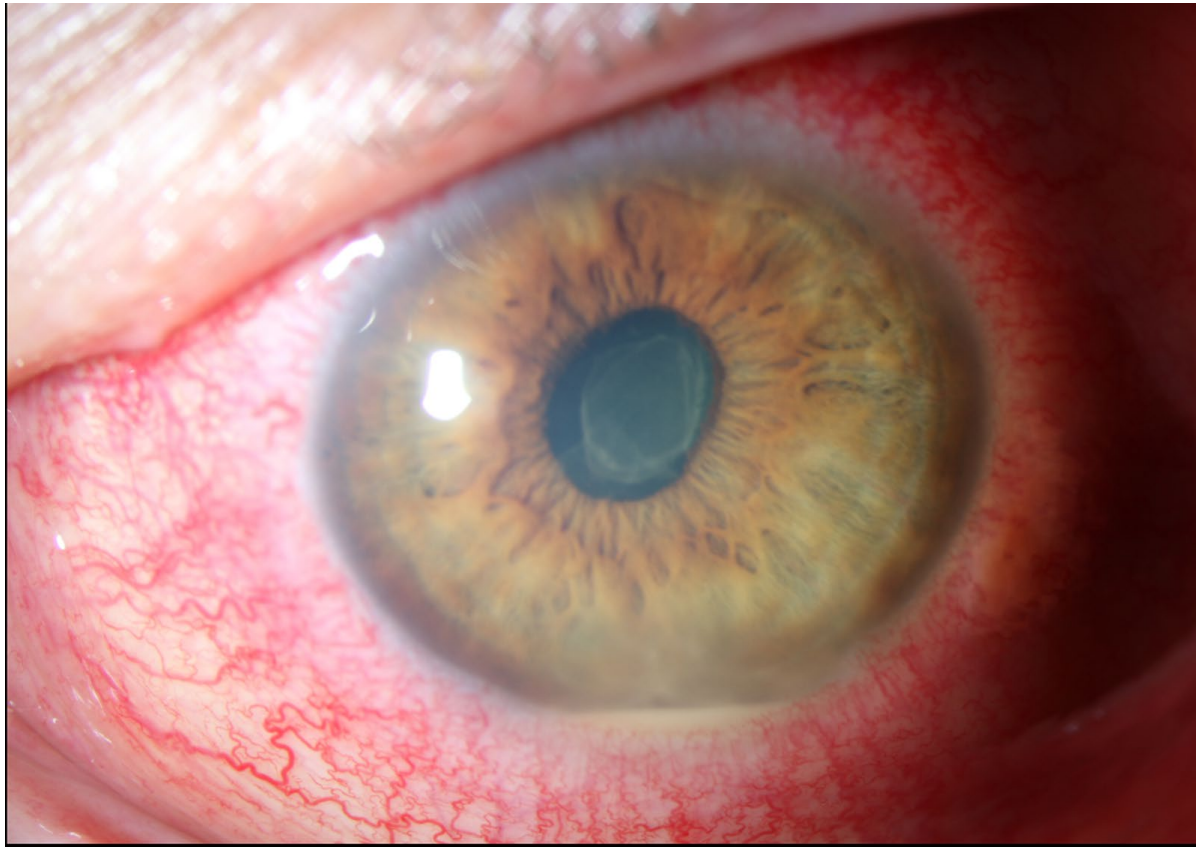
Base Eye Exam

Visual Acuity (Snellen - Linear)

	Right	Left
Dist sc	20/20 -3	20/40 +1
Dist ph sc		NI

Tonometry (Applanation, 12:42 PM)

	Right	Left
Pressure	14	12



DDX: Recurrent Acute Anterior Uveitis

- HLA-B27
- Behcet's
- Syphilis
- TB
- Sarcoid
- Endophthalmitis

Lab Review: HLA B27 +

Syphilis nonreactive, TB negative, ACE WNL, and Chest X ray Unrevealing

Work Up:

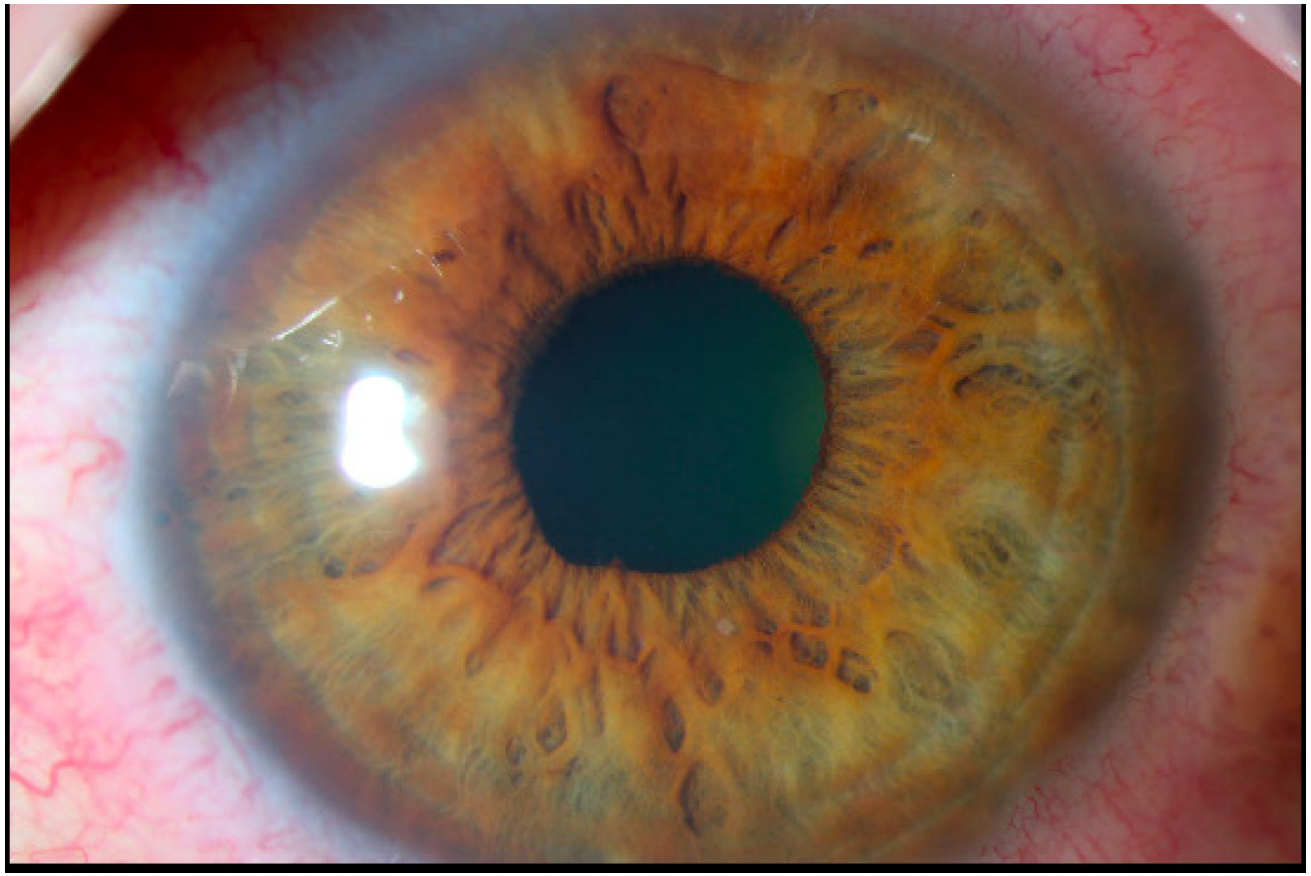
- CBC, CMP, ACE, Chest Imaging, TB, Syphilis with reflex (commonly IgG with reflex to RPR) all patients
  - Lyme if endemic area or history of hiking/outdoor activities/tick exposure
- + or - Lysozyme and IL-2R
- HLA B27 if acute recurrent, rarely smoldering or chronic
- HLA B51 (Bechet's association but remember clinical diagnosis so often not needed)

Course:

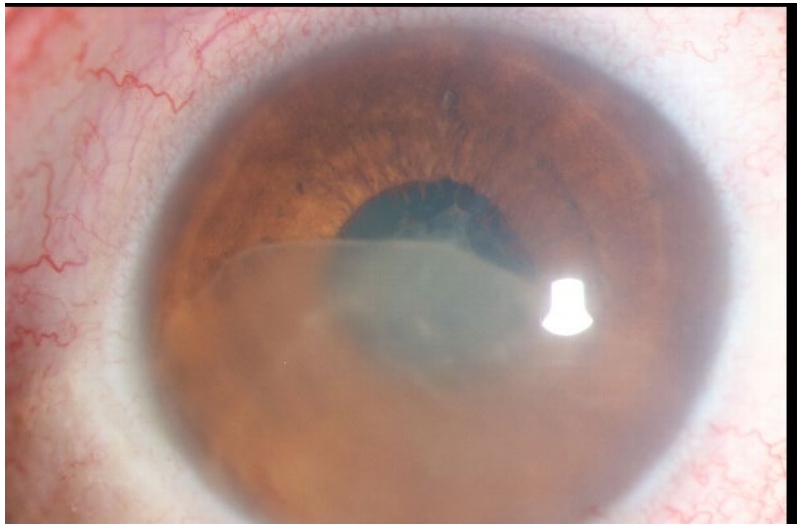
- Anterior Chamber Injection of 0.05 ml of 12.5/.1ml of Alteplase (activase)
- Difluprednate q 1 hour (Difluprednate QID equivalent to prednisolone q 1 hour)
- Cyclogyl BID

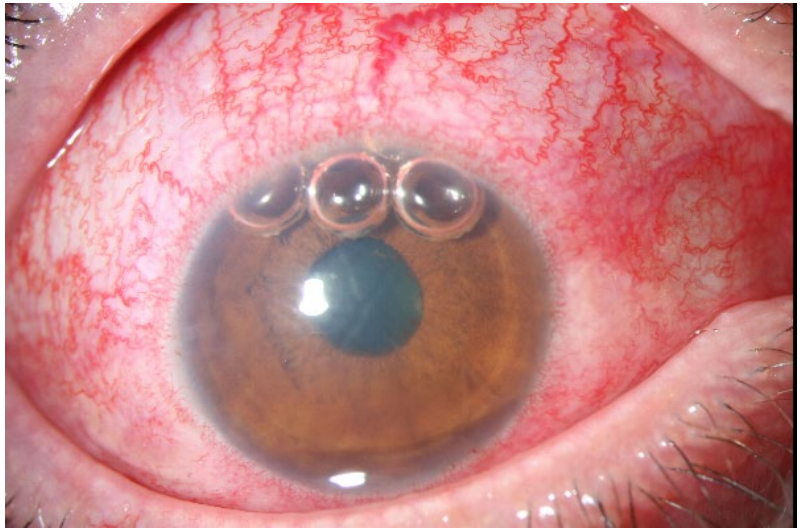
Course:

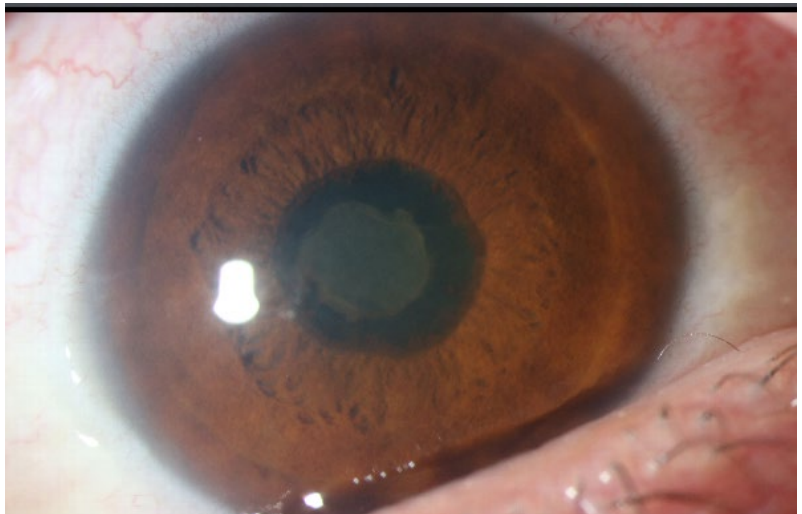
30 minutes after TPA



Additional Photos of Cases of TPA Use Before and After







Take Aways Case 1

- Proper history of course can help narrow down differential prior to lab testing (may lead away from endophthalmitis)
- Tailored Work Up
- Use of topical therapy in anterior uveitis
- Adjunctive Treatment of TPA useful for acute synechiae formation, preventing pupillary block secondary to 360-degree synechiae, resolution of fibrin or dense plaques in AC limiting exam or vision (best effect within 7 days)

Case 2

- 47-year-old man with referral of recurrent acute anterior uveitis since 2004, ICU Nurse.
- Received multiple Subtenon Kenolog Injections of both eyes by outside provider
- Most recent injection 3 months prior

POINT Trial

Periocular Triamcinolone vs. Intravitreal Triamcinolone vs. Intravitreal Dexamethasone Implant for the Treatment of Uveitic Macular Edema

The PeriOcular vs. INTravitreal corticosteroids for uveitic macular edema (POINT) Trial

*Jennifer E. Thorne, MD, PhD,[1,2] Elizabeth A. Sugar, PhD,[2,3] Janet T. Holbrook, PhD,[2] Alyce E. Burke, MPH,[2] Michael M. Altaweel, MD,[4] Albert T. Vitale, MD,[5] Nisha R. Acharya, MD, MS,[6,7] John H. Kempen, MD, PhD,[8,9,10] Douglas A. Jabs, MD, MBA,[2,11,12] for the Multicenter Uveitis Steroid Treatment Trial Research Group**

Purpose: To evaluate the comparative effectiveness of 3 regional corticosteroid injections for uveitic macular edema (ME): periocular triamcinolone acetonide (PTA), intravitreal triamcinolone acetonide (ITA), and the intravitreal dexamethasone implant (IDI).

Design: Multicenter, randomized clinical trial.

Participants: Patients with uveitic ME.

Methods: Patients were randomized 1:1:1 to receive 1 of the 3 therapies. Patients with bilateral ME were assigned the same treatment for both eyes.

Main Outcome Measures: The primary outcome was the proportion of baseline (PropBL) central subfield thickness (CST) at 8 weeks (CST at 8 weeks/CST at baseline) assessed with OCT by masked readers. Secondary outcomes included ≥20% improvement and resolution of ME, best-corrected visual acuity (BCVA), and intraocular pressure (IOP) events over 24 weeks.

Results: All treatment groups demonstrated improved CST during follow-up. At 8 weeks, each group had clinically meaningful reductions in CST relative to baseline (PropBL: 0.77, 0.61, and 0.54, respectively, which translates to reductions of 23%, 39%, and 46% for PTA, ITA, and IDI, respectively). Intravitreal triamcinolone acetonide (PropBL ITA/PropBL PTA, hazard ratio [HR], 0.79; 99.87% confidence interval [CI], 0.65–0.96) and IDI (PropBL IDI/PropBL PTA, HR, 0.69; 99.87% CI, 0.56–0.86) had larger reductions in CST than PTA ($P < 0.0001$). Intravitreal dexamethasone implant was noninferior to ITA at 8 weeks (PropBL IDI/PropBL ITA, HR, 0.88; 99.87% CI, 0.71–1.08). Both ITA and IDI treatments also were superior to PTA treatment in improving and resolving uveitic ME. All treatment groups demonstrated BCVA improvement throughout follow-up. Both ITA and IDI groups had improvements in BCVA that was 5 letters greater than in the PTA group at 8 weeks ($P < 0.004$). The risk of having IOP ≥24 mmHg was higher in the intravitreal treatment groups compared with the periocular group (HR, 1.83; 95% CI, 0.91–3.65 and HR, 2.52; 95% CI, 1.29–4.91 for ITA and IDI, respectively); however, there was no significant difference between the 2 intravitreal treatment groups.

Conclusions: Intravitreal triamcinolone acetonide and the IDI were superior to PTA for treating uveitic ME with modest increases in the risk of IOP elevation. This risk did not differ significantly between intravitreal treatments. *Ophthalmology 2019;126:283-295*

- Intraocular better at controlling macular edema and preserving vision
- Higher rates of Cataracts and Glaucoma
- New Medication- Xipere (triamcinole acetonide suprachoroidal) reports lower rates of glaucoma and cataracts

History

POH/Ocular Sx

none

Meds

None

Social Hx

Denies smoking, alcohol use, or drug abuse

PMH/PSH

None

FHx

Cancer

ROS

None reported

Exam

Base Eye Exam

Visual Acuity (Snellen - Linear)

	Right	Left
Dist cc	20/50 -2	20/20
Dist ph cc	NI	

Pupils

	Dark	React	APD
Right	5	+4	None
Left	5	+4	None

Tonometry (Applanation, 12:56 PM)

	Right	Left
Pressure	15	19

Visual Fields

Left	Right
Full	Full

Extraocular Movement

Right	Left
Full	Full

Slit Lamp and Fundus Exam

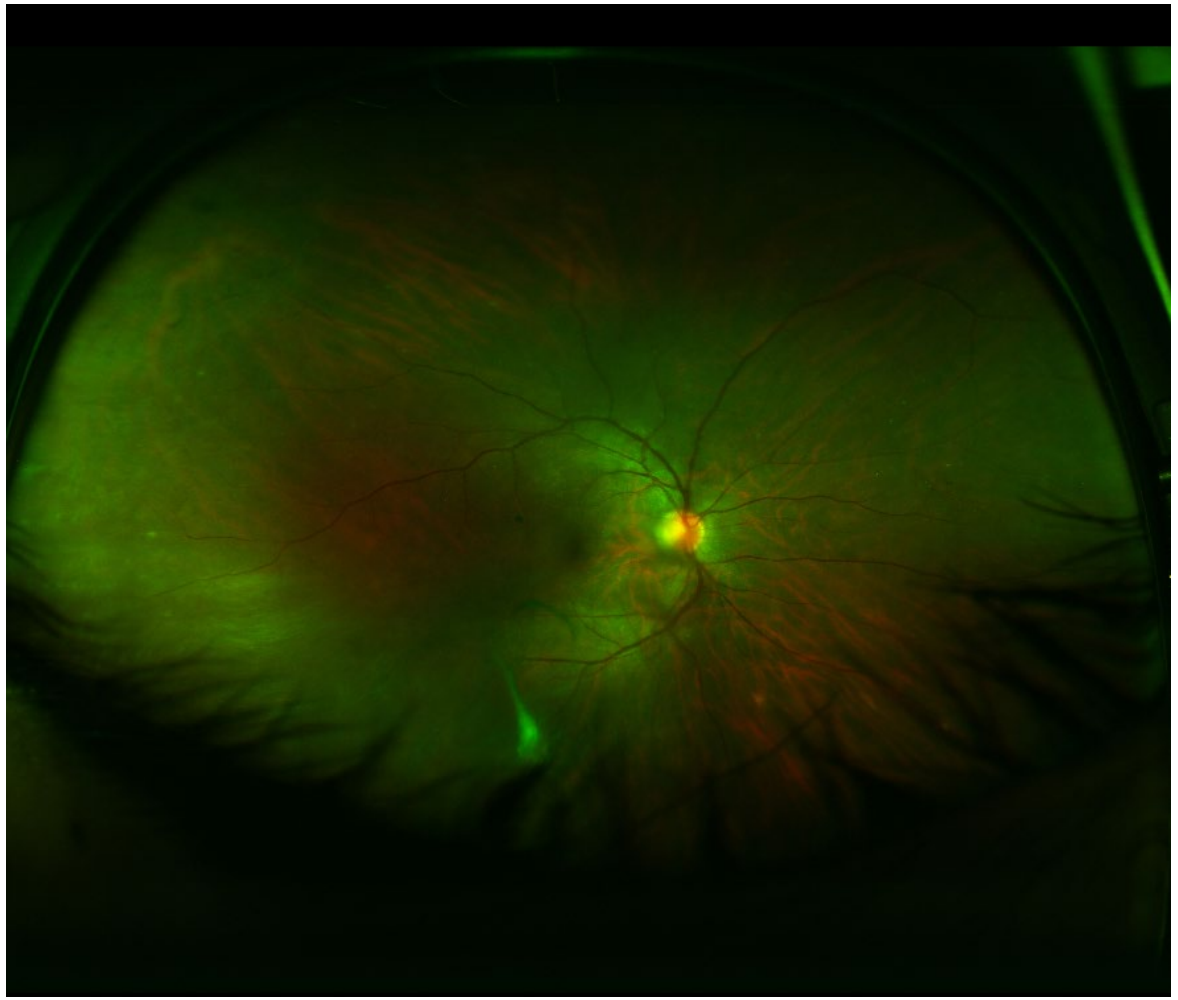
External Exam

	Right	Left
External	Normal including orbits and preauricular lymph nodes	Normal including orbits and preauricular lymph nodes

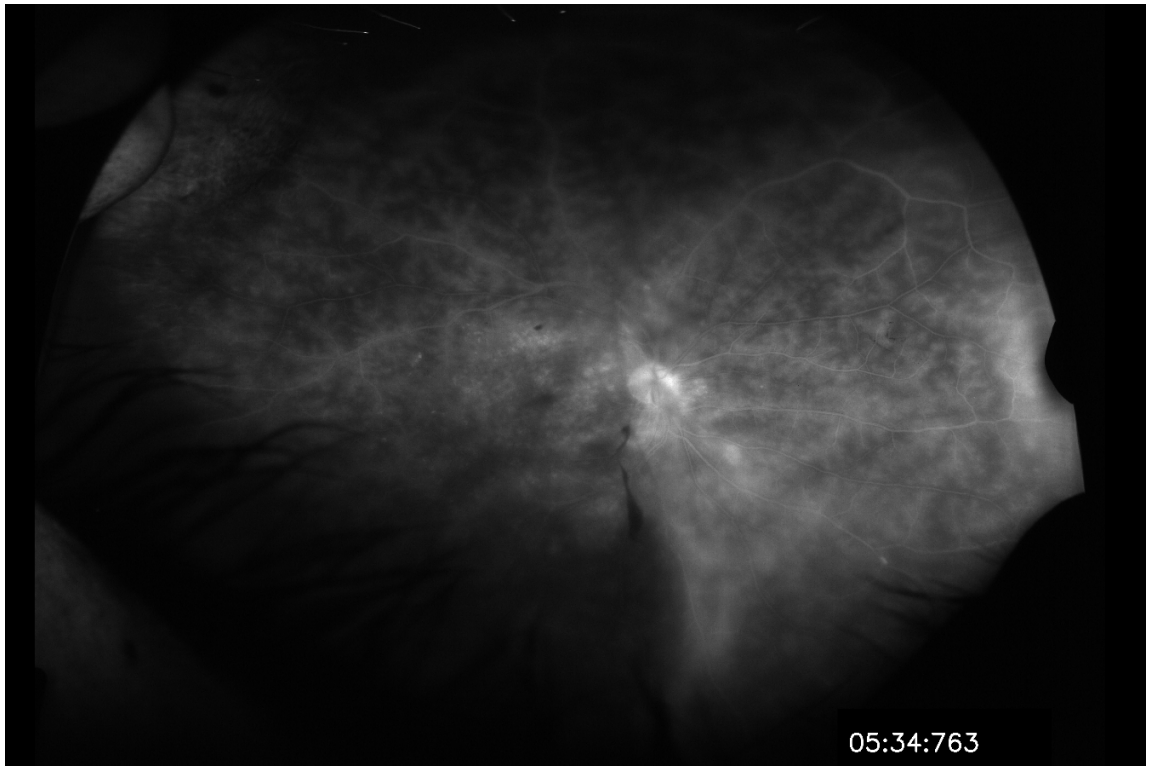
Slit Lamp Exam

	Right	Left
Lids/Lashes	Normal lids, lashes, lacrimal glands, and lacrimal drainage	Normal lids, lashes, and lacrimal drainage, ? enlarged lacrimal gland
Conjunctiva/Sclera	White and quiet	White and quiet
Cornea	Normal epithelium, stroma, endothelium, and tear film	Normal epithelium, stroma, endothelium, and tear film
Anterior Chamber	Deep and quiet	Deep and quiet
Iris	Round and reactive	Round and reactive
Lens	Clear	Clear

Case 2



Case 2



Case 2

DDX: Intermediate, Retinal Vasculitis

- Sarcoid
- TB
- Syphilis
- TINU

Lab Review: ACE (+), Chest CT 3mm Pulmonary Nodule Right Upper Lobe, Multiple Enlarged Mediastinal Lymph Nodes

Work Up:

- CBC, CMP, ACE, Chest Imaging, TB, Syphilis with reflex (commonly IgG with reflex to RPR) all patients
  - Lysozyme and IL-2R
  - Lyme if endemic area or history of hiking/outdoor activities/tick exposure
  - HLA B27 not likely presenting as such
  - IBD with retinal vasculitis if GI symptoms on ROS
  - MRI brain with neurological symptoms (rule out MS or CNS vasculitis)

Chest X Ray versus CT Chest with Contrast

- 1 view is no view, (AP and Lateral)
- Sensitivity and specificity for radiographic testing is highest for CT with 98.0% and 100% versus 57.6% and 100% for chest x ray
  - Limited by insurance companies who often require chest x ray first but if clinical suspicion is high, recommend a chest CT (even if chest x ray negative)

Case 2

- Seen by pulmonology for bronchoscopy with non-caseating granulomas on pathology report

	Ref Range & Units	8 yr ago
Color, BA Lavage		Colorless
Clarity, BA Lavage		Slightly turbid
Supernatant Color, BA Lavage		Colorless
Supernatant Clarity, BA Lavage		Clear
RBC, BA Lavage	/uL	18
Total Nucleated Cells, BAL	/uL	155
BAL Comment		Test Not Indicated
BAL Pathologist Interpretation		Test Not Indicated
Slide Number BA Lavage		132,814
Neut%, BA Lavage	0 - 1 %	2 ^
Lymph%, BA Lavage	6 - 8 %	46 ^
Macro%, BA Lavage	%	52

Case 2

- Acutely, placed on oral steroids 60 mg PO (1mg/kg) daily in the morning with food to regain control of inflammation
  - 10 mg taper per week taper with repeat imaging prior to complete taper
  - Medrol dose packs are not effective!

Case 2

- Placed on Methotrexate for steroid sparing agent and doing well

- Step Ladder Approach
  - Antimetabolites→ TNF Alpha Inhibitors→IL-6→ CD-20 Inhibitors-Alkylator Agents

  - 2 or more vision threatening flares a year or 3 or more flares a year require IMT

Take Aways

- Starting steroids prior to a complete work up can alter findings and lead to a loss or delay in diagnosis

- Routine UWF imaging we now recognize that much of the pathology associated with uveitis lies in the periphery, and that examination with conventional imaging may miss key signs in this area nearly 30% of the time.

- Systemic IMT Choices based on severity of disease and a time to effect

Case 3

- 54-year-old male with history of progressive remitting Multiple Sclerosis diagnosed in 2021 and maintained on Ocrelizumab infusions
- Completely clouded over for 5 months and seen by outside provider and given local steroid injection which dramatically worsened vision

Case 3- exam

Visual Acuity (Snellen - Linear)

	Right	Left
Dist cc	20/20	HM periph
Dist ph cc		NI

Correction: Glasses

Tonometry (Tonopen, 1:36 PM)

	Right	Left
Pressure	21	28

Slit Lamp Exam

	Right	Left
Lids/Lashes	Normal	Normal
Conjunctiva/Sclera	White and quiet	White and quiet
Cornea	Clear	Clear
Anterior Chamber	Deep and quiet	**3+ Flare, 3+ Cell**
Iris	Round and reactive	Round and reactive
Lens	Clear	**1+ NS**
Anterior Vitreous	Normal	1+ Vitreitis

History

POH/Ocular Sx

none

Meds

Ocrevus

Social Hx

Denies smoking, alcohol use, or drug abuse

PMH/PSH

MS

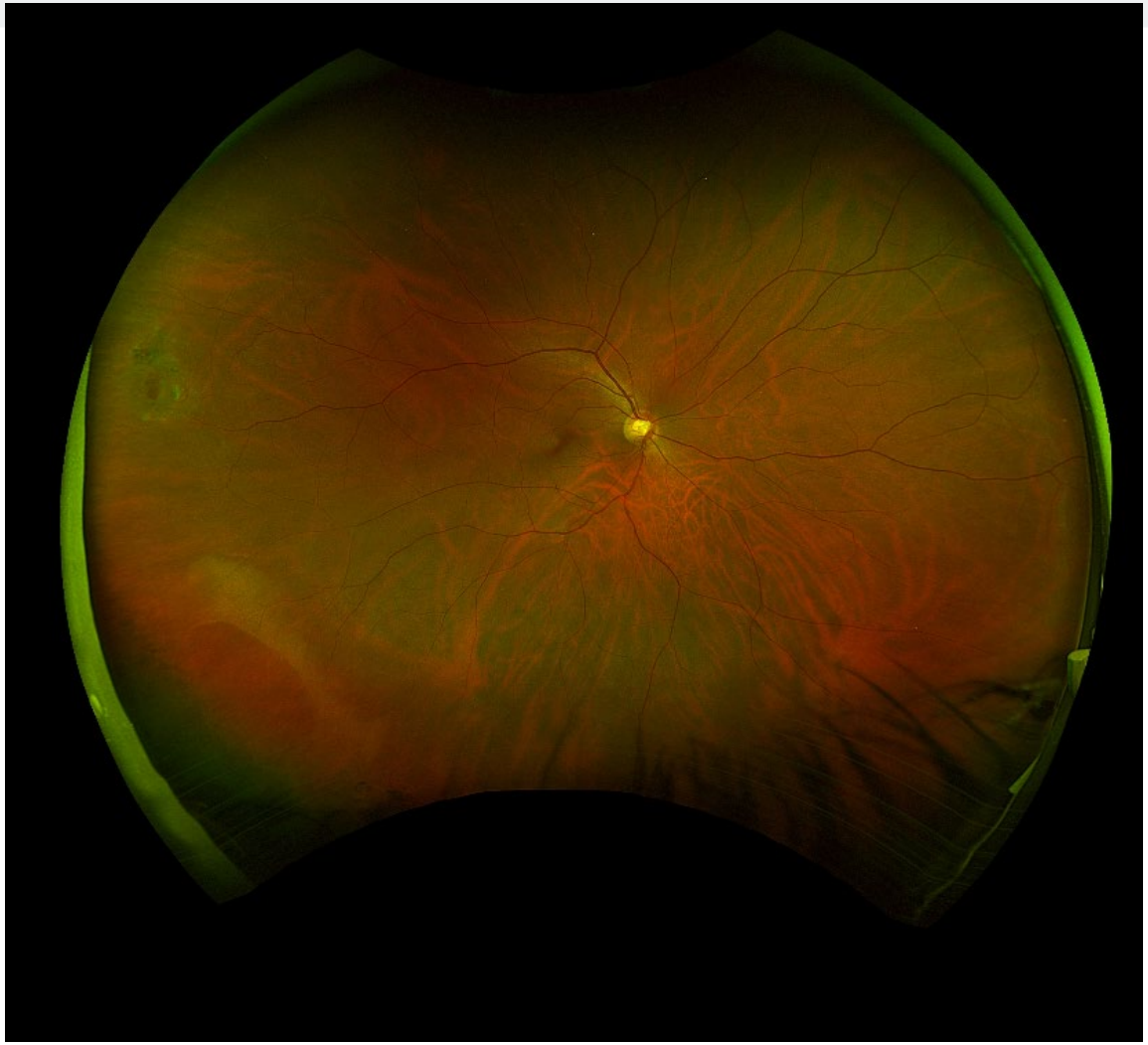
FHx

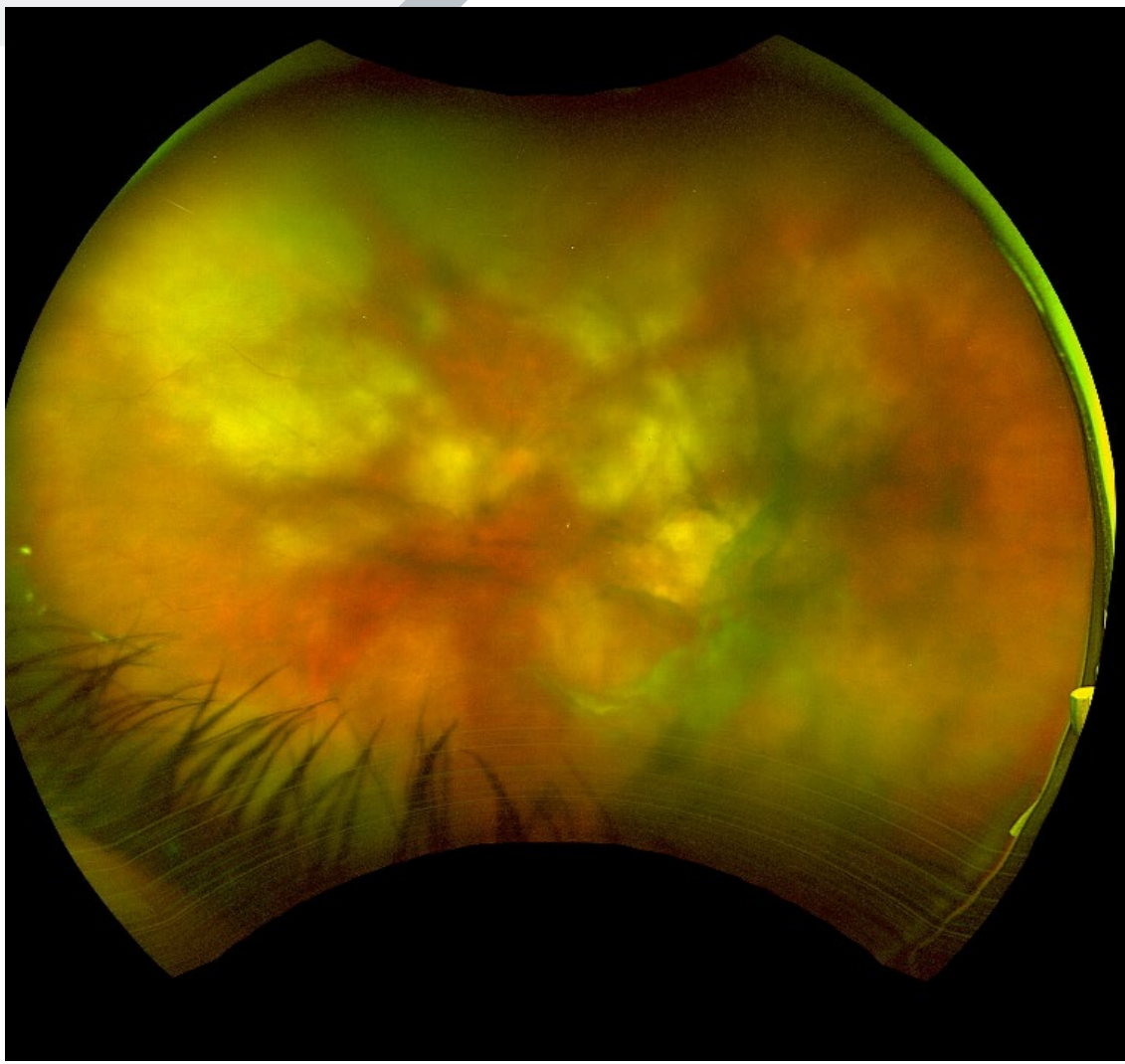
Cancer

ROS

None reported

Case 3- exam





DDX: Acute Retinal Necrosis

- Viral (HSV, VZV, CMV)
- Toxoplasmosis
- Lymphoma

Course: Tap and Inject with foscarnet and placed on oral Valtrex 1 g TID

- Bioavailability of 1 g TID similar to IV (2 g TID not always necessary and increases risk of acute kidney injury)
- Acyclovir dosing dependent on HSV versus VZV

Case 3- course

Toxoplasma gondii by PCR, Result **Positive!!**

Negative

Comment: Critical result.

----------ADDITIONAL INFORMATION----------

This test was developed and its performance characteristics
determined by Mayo Clinic in a manner consistent with CLIA
requirements. This test has not been cleared or approved by
the U.S. Food and Drug Administration.

Case 3- course

- Stop oral Valtrex
- Start Oral Bactrim
- Inject Intravitreal Clindamycin and Dexamethasone
  - Severe vision loss, macular or optic nerve threatening, pregnancy, consider local use

Case 3- course

Acute Retinal Necrosis: Features, Management, and Outcomes

Chun H. Lau MD, FRCS, Tom Missotten MD, FEBOphth, Joel Salzmann MD, FRCOphth, Susan L. Lightman PhD, FRCOphth

Early Intervention can reduce risk of retinal detachment and complications

Each quadrant involved increases risk of detachment by ~25%

Take Aways

- If infectious hasn't been ruled out, AVOID ALL STEROIDS
- Valtrex versus Acyclovir and dosing comparisons
- Consideration of coverage for all causes while working up
- Early interventions can save eye and reduce complications
- New retinal symptoms need to be monitored very closely due to high risk of detachment

Thank you!