Horses & Zebras

Common & Not-so-Common Etiologies of

Pediatric Uveitis

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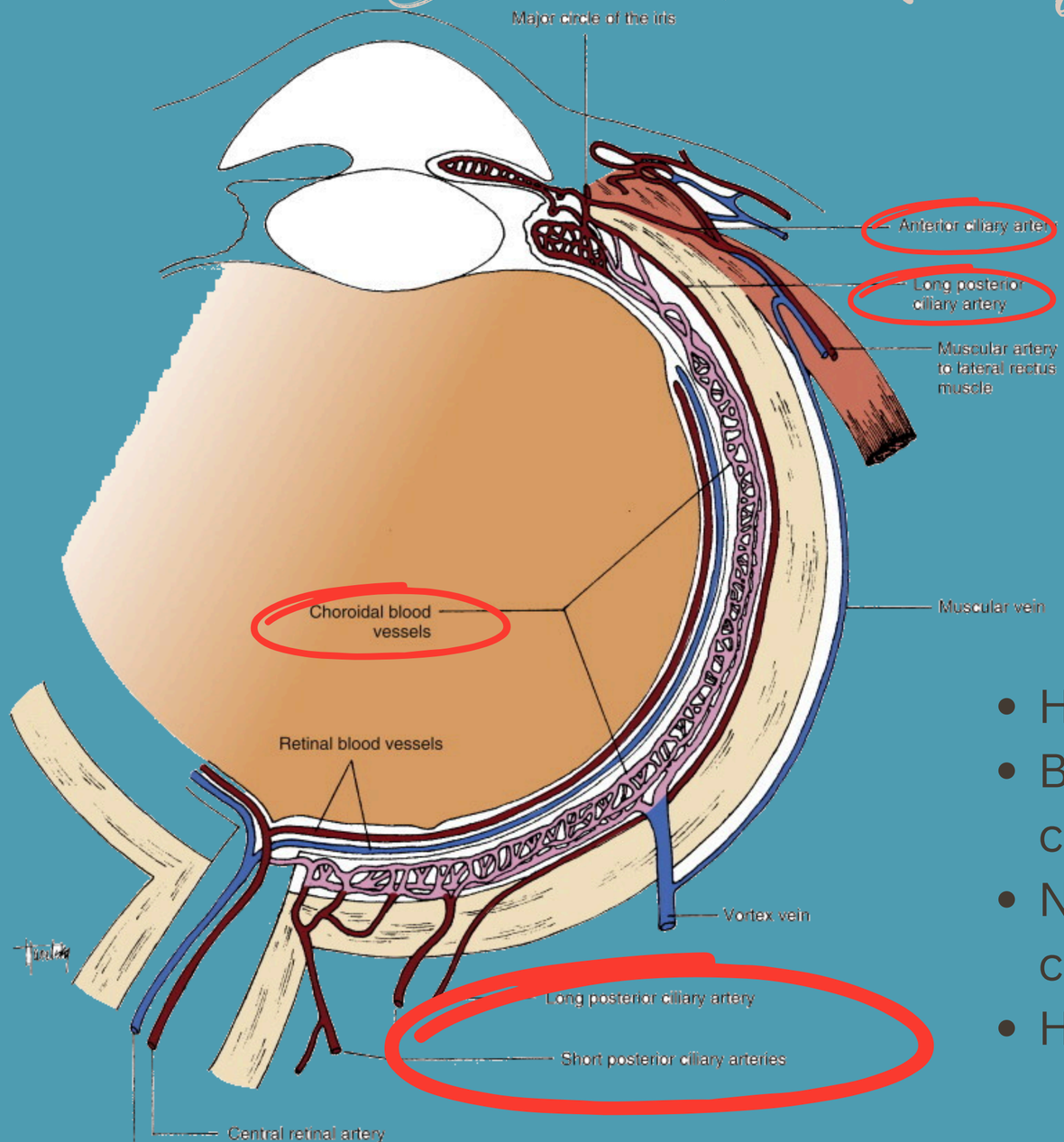
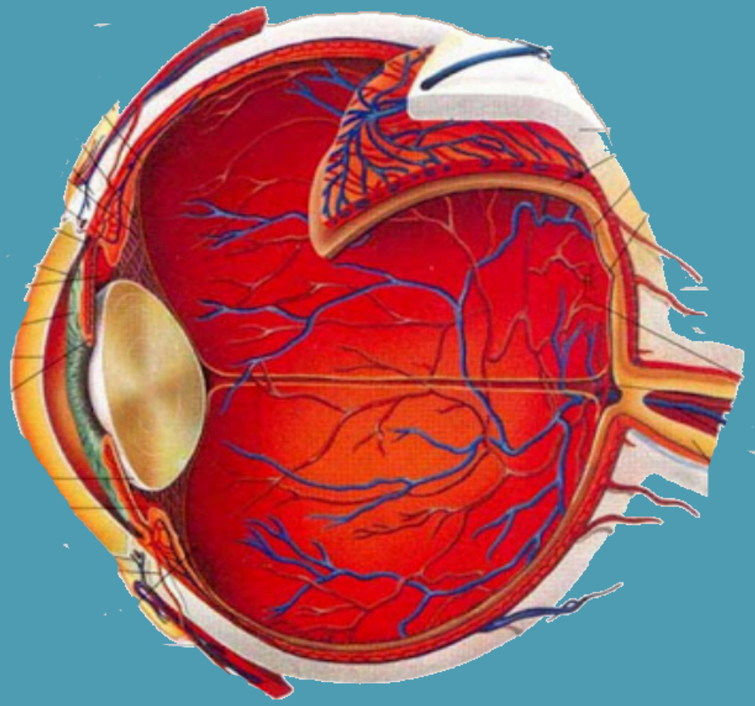
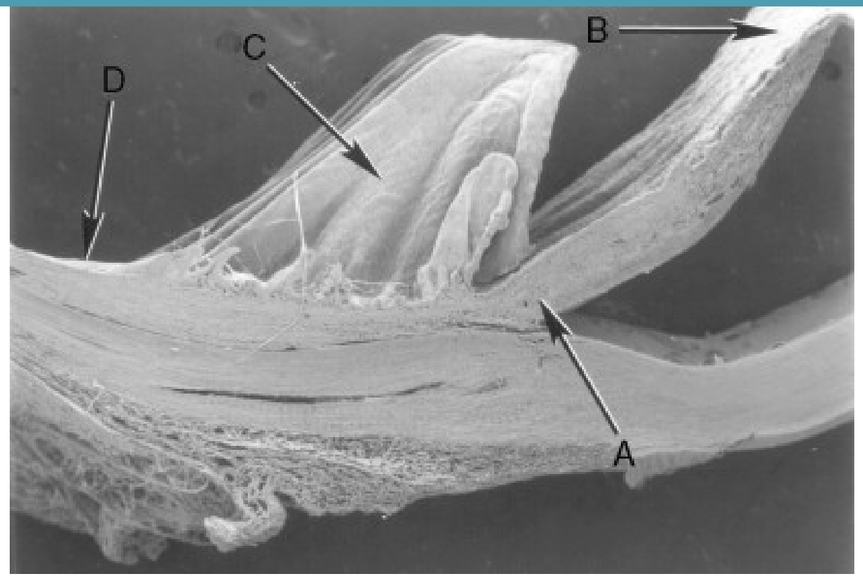
Basic Anatomy: Uveal Tract





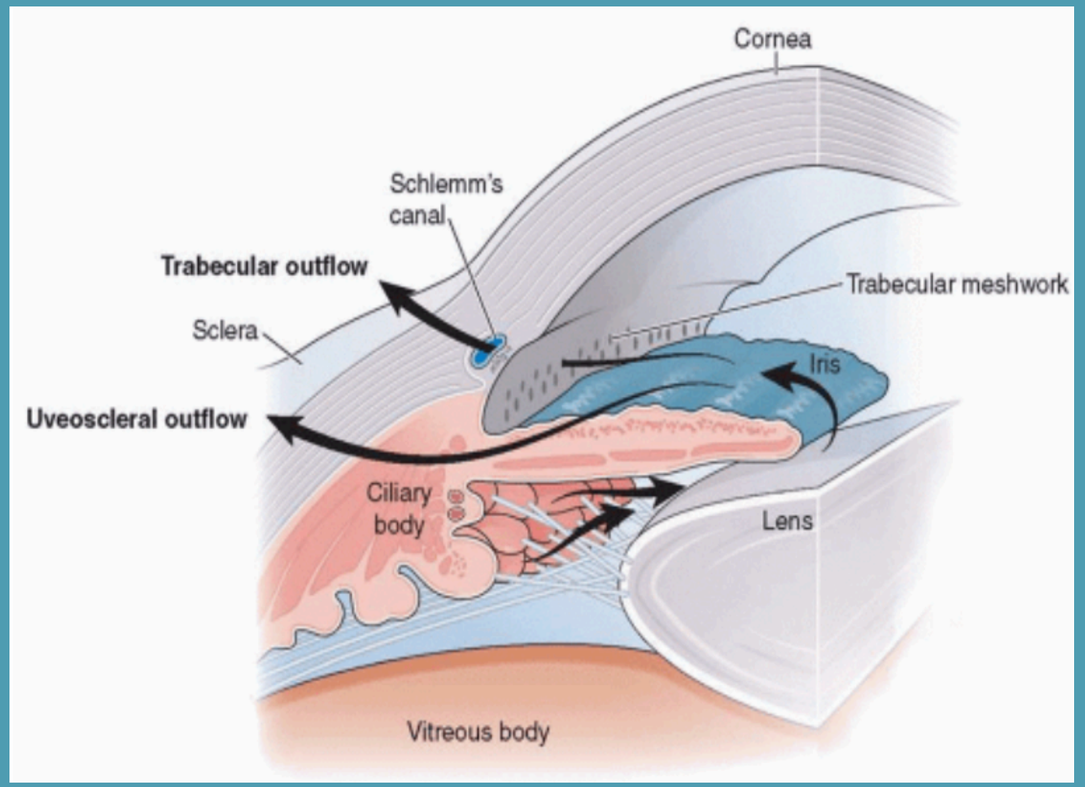
- Highly vascular loose fibrous tissue
- Blood supply from the anterior and posterior ciliary arteries
- Nerve supply from anterior and posterior ciliary nerves
- High concentration of dendritic melanocytes

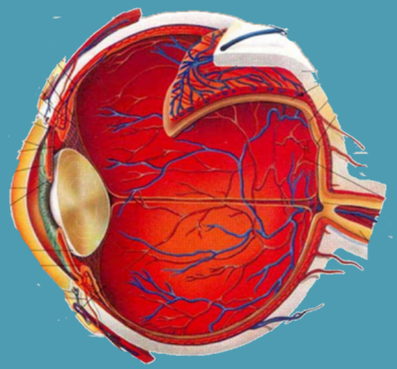
Basic Anatomy: Uveal Tract



The anterior uvea consists of the iris and ciliary body. Base of the iris (A), iridal pupillary margins (B), and ciliary body: pars plicata ciliaris (C) and pars plana ciliaris (D). SEM, 25×.

(Courtesy of Dr Don Samuelson, University of Florida.)





- Anterior Uveal Tract: Iris & Ciliary Body
- Posterior Uveal Tract: Choroid

Classification / Nomenclature

PANUVEITIS

LOCATION
- Anterior
- Intermediate
- Posterior

KERATIC PRECIPITATES
- Granulomatous
- Non-Granulomatous

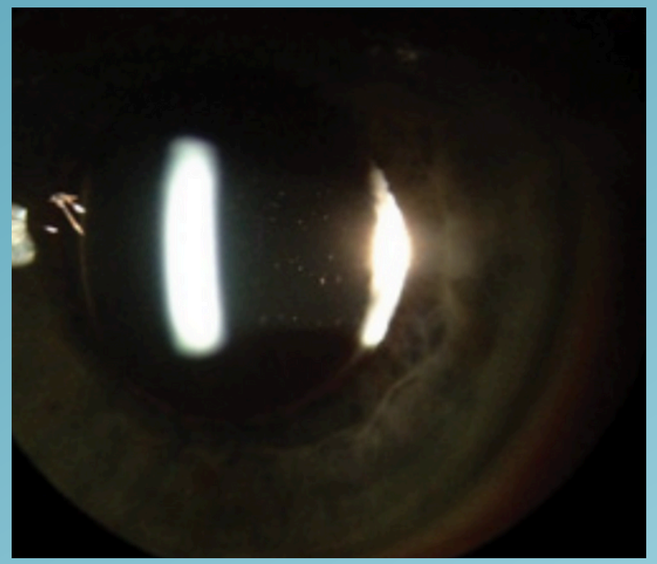
LATERALITY
- Unilateral
- Bilateral

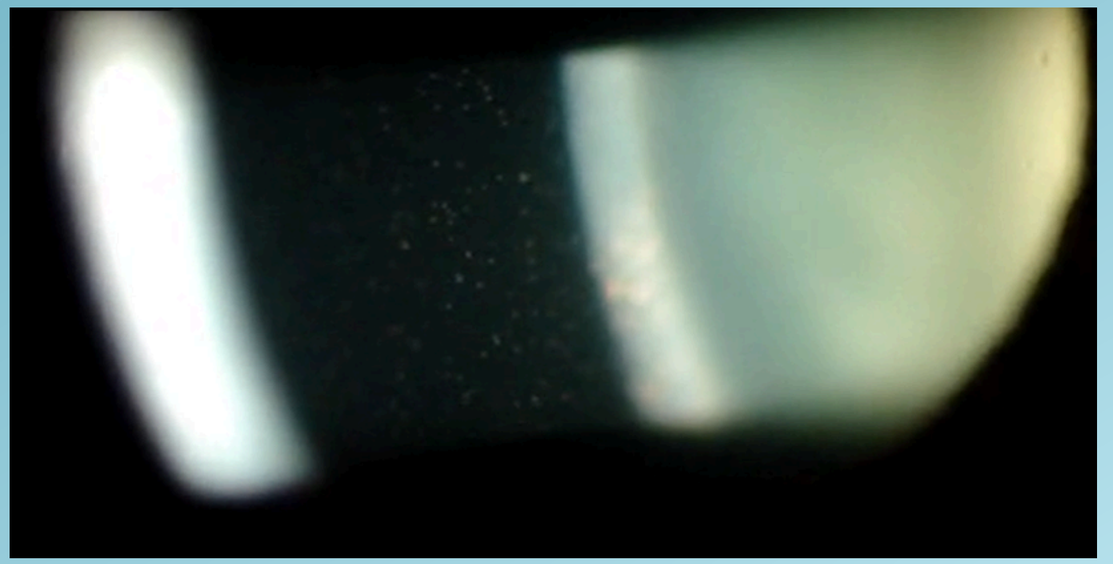
CHRONICITY
- Acute
- Chronic

SYMPTOMS
- Painless
- Painful

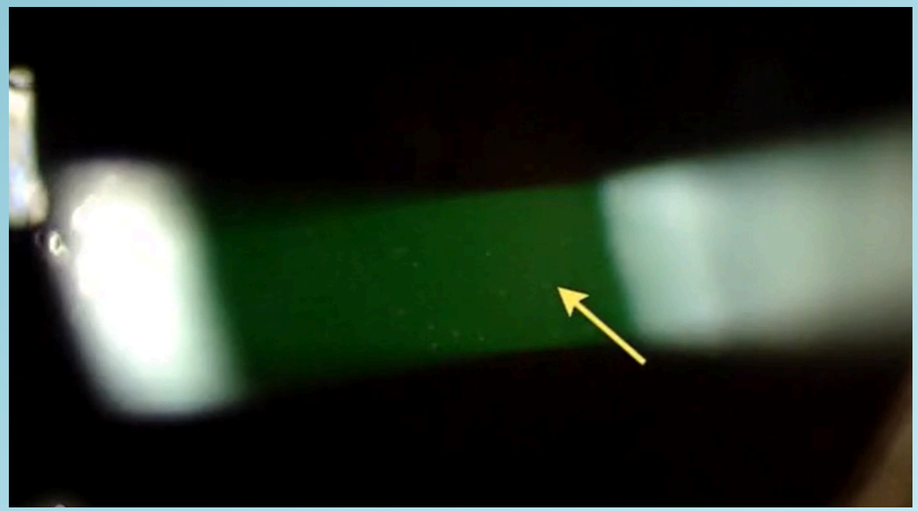
Signs

Cells



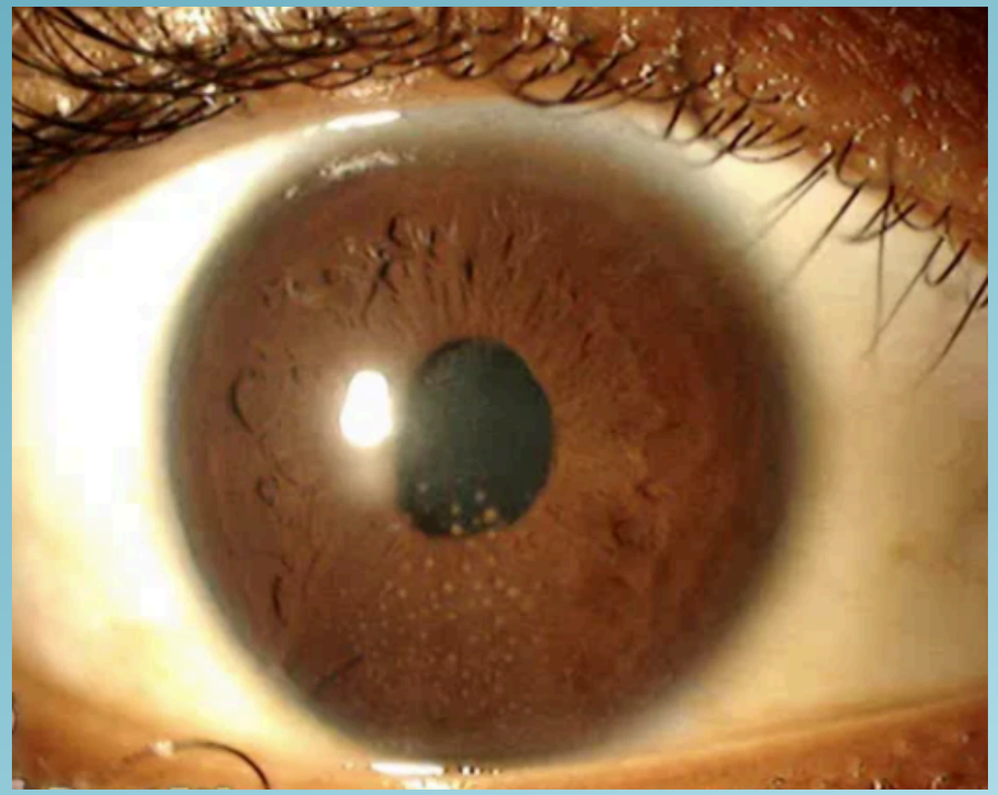


Flare

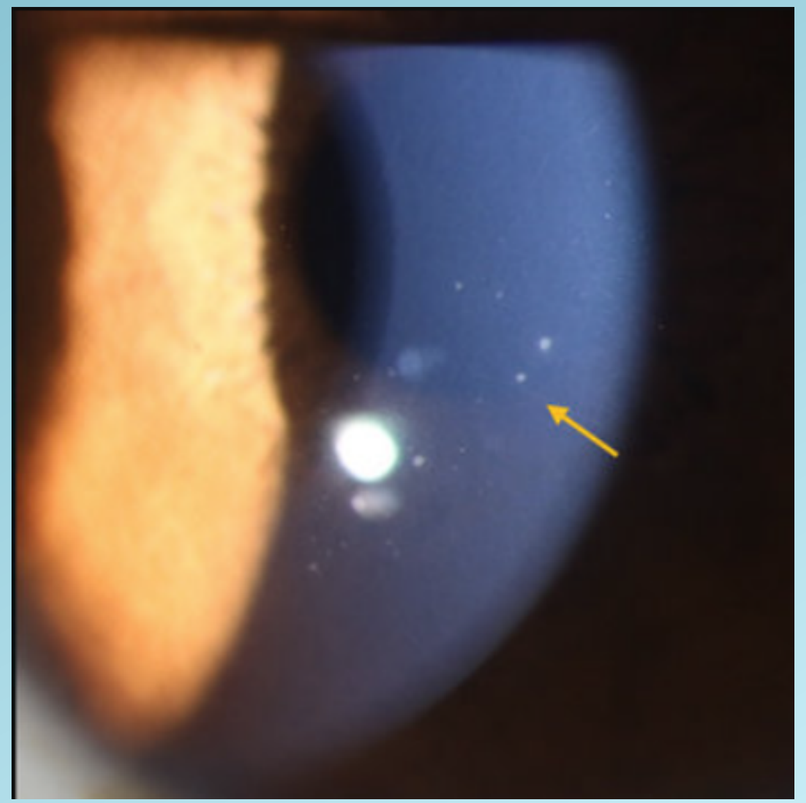


Signs

Keratic Precipitates



Granulomatous



Non - Granulomatous

Symptoms

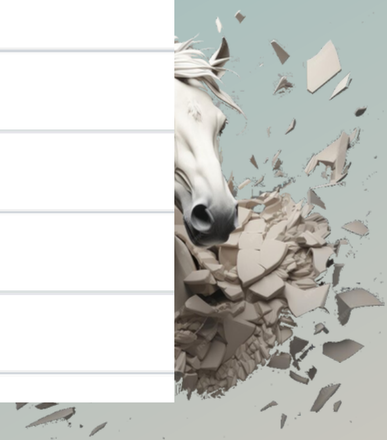
Pain
Photophobia
Blurry Vision
Conjunctival injection (limbal flush)

Diagnosis

Bilateral Uveitis lab work up

✳ *Only done if specific condition suspected*

ID	Name
LAB547	Sedimentation rate, manual
LAB2610	HLA B27 ANTIGEN
LAB179	ANGIOTENSIN CONVERTING ENZYME
LAB147	ANA PROFILE I (SCREEN)
LAB494	RPR ✳
LAB866	FTA ANTIBODIES, IGG AND IGM ✳
NUR559	POCT TB Skin Test ✳
IMG34	X-Ray Chest 1 View ✳
LAB206	Rheumatoid factor
LAB62	CK
LAB149	C-REACTIVE PROTEIN
LAB1748	CBC Auto Differential
LAB17	Comprehensive Metabolic Panel



Etiology

“The majority of childhood uveitis syndromes are secondary to localized or generalized disorders of control of inflammation”*

- Idiopathic
- Traumatic
- Infectious
  - Histoplasmosis
  - Toxoplasmosis
- ANA +
- Autoimmune Disease
  - Ulcerative Colitis/ Crohn’s
  - JIA

*Hoyt, Creig S, and David Taylor. Pediatric Ophthalmology and Strabismus. 4th ed., Edinburgh, Saunders/Elsevier, 2013, pp. 377–391.

treatment

- Topical Steroids
- Oral Steroids
- Systemic
  - Methotrexate
  - Biologics

- Co-management
- Side effects
- Long term considerations

Cases

Case #1

4y.o. African-American Male

CC: Excessive blinking; “Just diagnosed with arthritis”

VA: 20/30; 20/30

Slit Lamp and Fundus Exam

External Exam

	Right	Left
External	Normal	Normal

Slit Lamp Exam

	Right	Left
Lids/Lashes	Normal	Normal
Conjunctiva/Sclera	White and quiet	White and quiet
Cornea	Clear	Clear
Anterior Chamber	2-3+ Cell	1+ Cell
Iris	Round and reactive	Round and reactive
Lens	Clear	Clear

Case #1, cont.

Diagnosis: Bilateral anterior uveitis (presumed etiology: JIA)
Treatment: Prednisolone Acetate 1% (PA) , OU, Q.I.D.

Visit#2 (1 week):

- Decreased inflamation (1+ cell OD/ quiet OS)
- PA decreased to T.I.D. OU

Visit #3 (1 week):

- Decreased inflamation (Trace cell OD/ quiet OS)
- PA continued T.I.D. OU

Visit #4 (2 weeks):

- Stable
- Continued PA T.I.D OU (RTC 1 month)

Visit #5 (2 months)

- Hospitalized for 5 weeks --> dx with Chronic Inflammatory Demyelinating Polyneuropathy (CIPD)

Case #1, cont.

Next 6 months:

- Extended taper of PA
- Uveitis completely quiet

One year later: Updated diagnosis

Case #2

17y.o. Caucasian Male

- CC: Hit in the eye by phone charging cord that morning
- VA sc: OD 20/125 OS 20/200; PH : OD 20/40 OS20/20
- Pupils: OD 6-6 (-)DC No reaction (-) APD

  OS 4-3 (+)DC 4+/4+ (-) APD
- EOMs - FROM OU

Case #2, cont.

Slit Lamp Exam

	Right	Left
Lids/Lashes	**erythema and mild edema at lateral aspect of upper lid**	Normal
Conjunctiva/Sclera	**2+ Injection**	White and quiet
Cornea	Clear	Clear
Anterior Chamber	**hyphema, 2+ Flare, 3+ Cell**	Deep and quiet
Iris	**hyphema**	Round and reactive
Lens	Clear	Clear

Fundus Exam

	Right	Left
Vitreous	Normal	Normal
Disc	Normal, No pallor, no edema, no coloboma, no hypoplasia	Normal, No pallor, no edema, no coloboma, no hypoplasia
C/D Ratio	0.2	0.2
Macula	Normal, (+) foveal reflex	Normal, (+) foveal reflex
Vessels	Normal, Normal course and caliber, No tortuosity	Normal, Normal course and caliber, No tortuosity
Periphery	Normal, Flat & intact 360°, no holes, tears, RD	Normal, Flat & intact 360°, no holes, tears, RD

Case #2, cont.

Assessment & Plan

1. Uveitis after traumatic injury of eye

- prednisoLONE acetate 1 %: 1 gtt, OD Q.I.D.
- homatropine 5 %: 1 gtt OD B.I.D.

2. Traumatic hyphema of left eye, initial encounter

-Strict bedrest with bathroom privileges only; head elevated at 45 degrees

-No NSAIDS

3. Retinal Health intact OU

- Return to clinic immediately with any new spontaneous flashes of light, a vail of gray, black or other color come over vision, or any new floaters

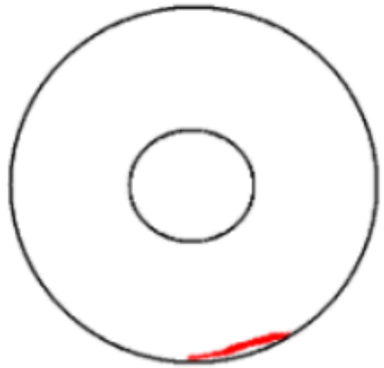
RTC in 1 day for VA, IOP check, retina check

Case #2, cont.

Visit #2: 1 Day f/u:

- VA sc: 20/125 OU PH : OD 20/25 + OU
- Pupils: OD 5-5 Minimal Reaction (-) APD OS 5-3 (+)DC 4+/4+ (-) APD
- IOP: 14 mmHg OD

Slit Lamp Exam

	Right	Left
Lids/Lashes	Normal	Normal
Conjunctiva/Sclera	White and quiet	White and quiet
Cornea	fine KPs	Clear
Anterior Chamber	3+ Cell; no flare	Deep and quiet
Iris	Round and reactive	Round and reactive
		
Lens	Clear	Clear

Edited by: Brown, Kefla G., OD

Fundus Exam

	Right	Left
Vitreous	Normal	
Disc	Normal, No pallor, no edema, no coloboma, no hypoplasia	
Macula	Normal, (+) foveal reflex	
Vessels	Normal, Normal course and caliber, No tortuosity	
Periphery	Normal, Flat and Intact	

Case #2, cont.

Visit #2 - Assessment /Plan

1. Uveitis after traumatic injury of eye --> same cell, no flare
-Increase prednisolone acetate 1% drops to every 2 hours while awake (OD) today, then back to every 4 hours tomorrow
-Start cyclopentolate 1% twice daily, right eye, when available (OD)

2. Traumatic hyphema of left eye, subsequent encounter --> resolving
-Decrease in blood in A/C (no 8 ball hyphema, no layering; no re-bleed)
-Continue strict bedrest with bathroom privileges; head at 45 degree incline; avoid valsalva maneuvers

RTC in 1 day for retina, IOP, uveitis check , sooner as needed

Case #2, cont.

Visit #3: 1 Day f/u:

- VA cc: 20/20 OD

Pupils: “OD pupil is sluggish, dilated but reactive to light.”

- IOP: 15 mmHg OD
- SLE: “min blod, Trace Cell, no flare”
- Bedrest maintained

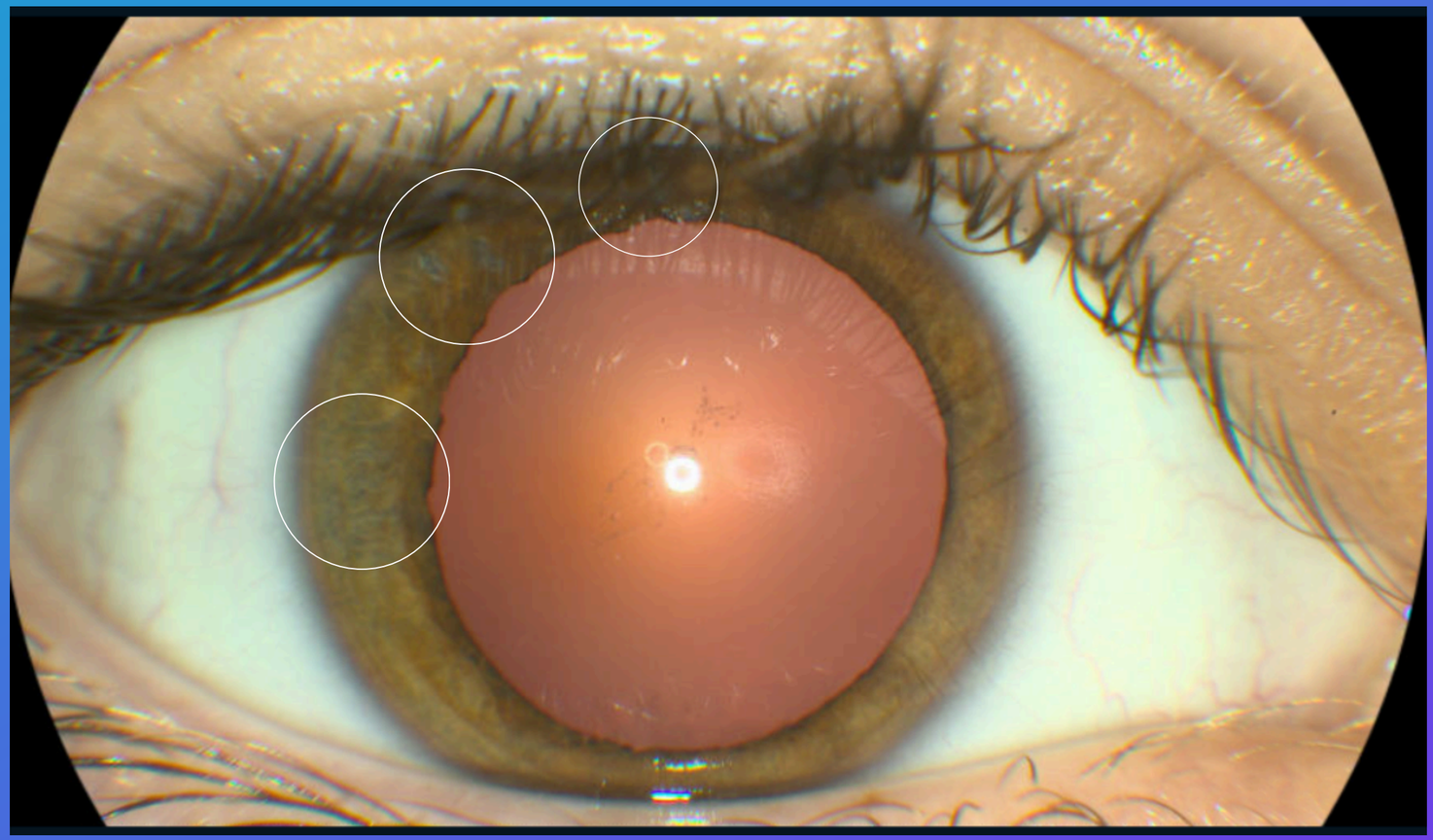
Visit#4: 6 Day f/u:

- VA cc: 20/25 OD 20/20 OS
- Pupils: OD 5-4.5 Sluggish Reaction (-) APD OS 4-3 (+)DC 4+/4+ (-) APD
- IOP: 8 mmHg OD
- SLE: 1+ Cell; NO HYPHEMA; no flare
- A/P 1. PA increased to 4 times daily.
- ok to resume normal activities with care and caution
- RTC 1 week

Case #2, cont.

Visit #5: 1 Week f/u:

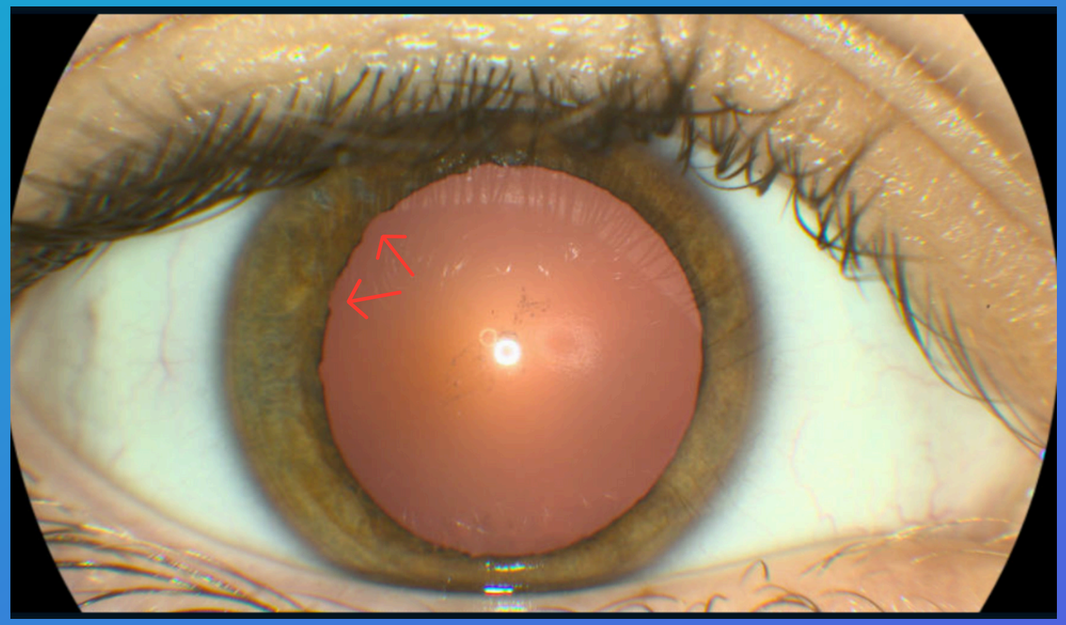
- BCVA: 20/20 OD (-1.25DS)
- Pupil:
  - OD 6-5.5 (+) DC 2+/2+ (-) APD
  - OS 4-3 (+) DC 4+/4+ (-) APD
- IOP OD: 12 mmHg
- 1+ Cell; no hyphema
- TRANSILLUMINATION DEFECTS

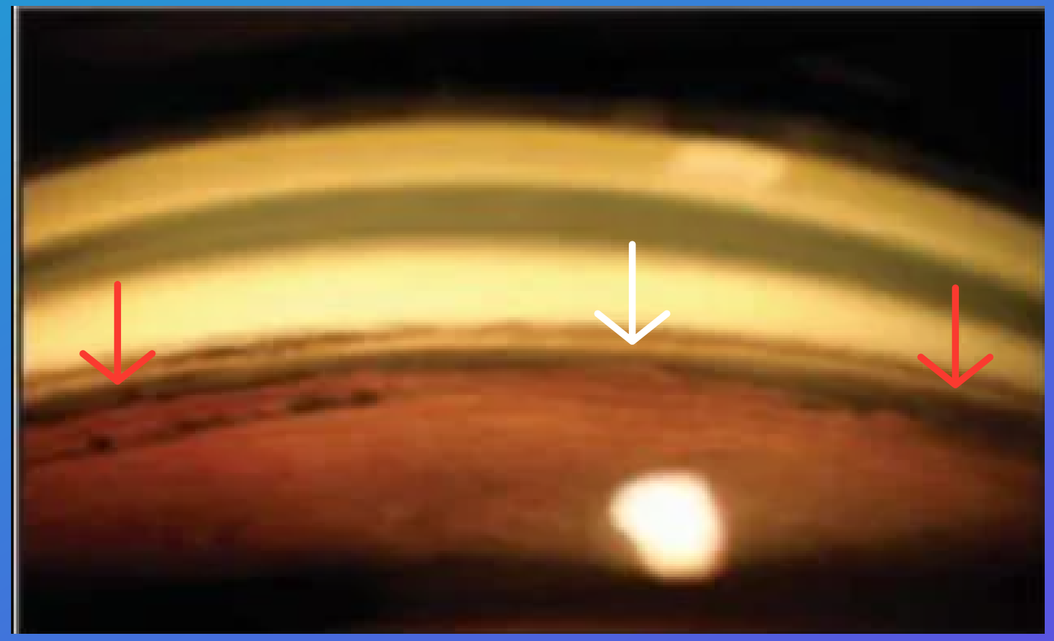


Case #2, cont.

Referral to Glaucoma OMD:

- Angle Recession 360 degrees
- SphincterTear
- Transillumination Defects





A/P:

- Traumatic mydriasis OD with Iris sphincter tears and transillumination defects of the right iris
- Iris unable to constrict fully with light
- Increased risk of photosensitivity
- No acute surgical intervention today
- Could be a candidate for medical therapy if photosensitivity becomes bothersome

RTC 3 months with HVF24-2, OCT-RNFL, gonio, pachymetry

Case #3

6 y.o. Caucasian Female

- CC: Failed vision screening at PCP
- VA sc: OD 20/20 OS 20/40
- Pupils: Photopic:
  - OD 7 - 4 (+)DC 4+/4+ (-) APD
  - OS 5 - 4 (+)DC 1-/1- (-) APD
- Pupils: Scotopic:
  - OD 8 - 6 (+)DC 4+/4+ (-) APD
  - OS 5 - 4 (+)DC 1-/1- (-) APD
- EOMs - FROM OU
- Ishihara - Normal, OU
- Stereopsis: Global - 125" Contour - 50"
- Worth 4 Dot: Distance - Suppression OS; near - Fusion
- Bruckners: (+) anisocoria (right>left); dim reflex, left eye
- Cover Test: Ortho at distance; 10 XP at near (NPC: TN)

Cycloplegic refraction:
OD +0.50 sph
OS +2.50 sph

Case #3, cont.

Slit Lamp and Fundus Exam

External Exam

	Right	Left
External	Normal	Normal
Palpebral fissure	11 mm	10 mm
MRD1	3 mm	1 mm
MRD2	5 mm	5 mm
Superior scleral show	0 mm	0 mm
Inferior scleral show	0 mm	0 mm

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	2+ Flare
Iris	Round and reactive	Posterior synechiae, Posterior synechiae 360 degrees
		 1: Posterior synechiae 360 degrees
Lens	Clear	Anterior cortical changes/ diffuse mild opacity

Fundus Exam

	Right	Left
Vitreous	Normal	Normal
Disc	Normal, No pallor, no edema, no coloboma, no hypoplasia	Grossly Intact
Macula	Normal, (+) foveal reflex	Grossly intact
Vessels	Normal, Normal course and caliber, No tortuosity	Grossly intact
Periphery	Normal, Flat & intact 360°, no holes, tears, RD	Grossly Intact

Limited view, OS secondary to small pupil and lens opacity

Case #3, cont.

Assessment /Plan

1. **Chronic uveitis of left eye as evidenced by flare in anterior chamber and extensive posterior synechiae**

Lab work up:

Sedimentation rate; HLA B27 Antigen; Angiotensin Converting Enzyme; ANA; Rheumatoid Factor; CK;

CRP; CBC auto differential; CMP

- Start treating with prednisolone acetate 1 %: 1 gtt, OS q. 4 hours

2. Posterior synechiae (iris), left eye

-(+) significant pupillary block

-No increased IOP (15 today)

-Optic nerve appeared to be grossly intact

- Start atropine (left eye twice daily) in attempt to break synechiae

Case #3, cont.

3. Anisocoria (right>left) secondary to posterior synechiae

4. Juvenile cataract of left eye

5. Anisometropic Hyperopia (left>right)
-(+)amblyogenic
- Partial Spec Rx

6. Amblyopia of left eye
-Deprivation from cataract v. Anisometropic
-Re-evaluate after glasses use and with decreased inflammation

7. Suppression of binocular vision

Parent education; RTC in 10-14 days for uveitis check, sooner as needed

Case #3, cont.

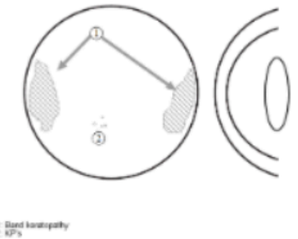
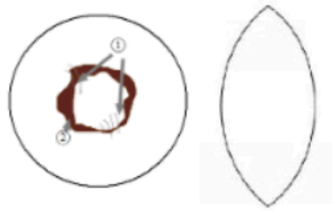
LAB RESULTS: POSITIVE ANA

Visit with Pediatric Rheumatologist: Offered Methotrexate pending recalcitrance of uveitis

Visit #2: 2 weeks

- Mom did not fill glasses
- PA and Atropine were being done
- PS were broken
- Flare decreased
- PA decreased to T.I.D.
- Referral made to Pediatric OMD for cataract evaluation

Slit Lamp Exam

	Right	Left
Lids/Lashes	Normal	Normal
Conjunctiva/Sclera	White and quiet	White and quiet
Cornea	Clear	Keratic precipitates, Band keratopathy, KP's
		
Anterior Chamber	Deep and quiet	2+ Cell, Trace Flare
Iris	Round and reactive	synechiae at 4-5 and 10-11
		
Lens	Clear	pigment on anterior capsule 360 degrees; 1-2+ diffuse opacity, Posterior synechiea, Pigment from iris at pupillary margin
		

Case #3, cont.

Final Diagnosis & Treatment