

RED, HOT, & INFLAMED: UVEITIS RULES & CLASSIFICATIONS

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Overview

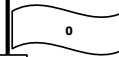
- Definition
- Etiology
- Signs/Symptoms
- Classification/Diagnosis
- Systemic Associations
- Lab Testing
- Treatment
- Follow-up

What is Uveitis?

- Uveitis:
 - Generic, broad term referring to any inflammation of the uvea (iris, ciliary body, and choroid)
 - More precise terms include iritis and iridocyclitis
 - The inciting event -> release of chemotactic factors/mediators that increase vascular permeability -> breakdown of the blood-aqueous barrier -> macrophages/lymphocytes/proteins = CELLS & FLARE

Which of the following is NOT one of the most common causes of uveitis?

1. Trauma
2. Drug abuse
3. Infectious
4. Autoimmune disease



Etiology

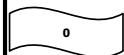
- 3 main underlying causes are:
 - reaction to trauma
 - autoimmune
 - response to autoantigens
 - response to infectious agent

Uveitis – Signs and Symptoms

- ☐ Patient symptoms are often very similar with all of the various etiologies
 - Can be some differences
- ☐ Anterior uveitis
 - pain, redness, photophobia
- ☐ Intermediate/Posterior uveitis
 - Floaters, mildly decreased vision from CME, etc

Patients with chronic uveitis are likely to be?

1. More symptomatic than acute uveitic pts
2. Less symptomatic
3. Symptoms are fairly equal between the two



Symptoms

- ▣ Common patient symptoms include:
 - pain – ciliary spasm
 - red eye – ciliary flush
 - tearing
 - photophobia
 - blurred vision
 - Pupillary miosis

Signs – Cells/Flare

- ▣ Critical signs are cells and flare in the anterior chamber
 - Cells are lymphocytes or macrophages and indicate active inflammation in the iris and ciliary body.
 - Flare is a result of protein leakage.

Signs – KP's

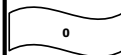
- ▣ Keratic precipitates
 - collections of inflammatory cells deposited on the endothelial surface of the cornea from the aqueous humor
 - fresh KP's -> white and round
 - older KP's -> pigmented or faded.
 - Document size, color, distribution, and # of KP's

Signs - Nodules

- ▣ Accumulation of cells on the iris are referred to as iris nodules. Two types exist:
 - Koeppe nodules are found on the pupillary border and Busacca nodules are on the anterior surface.
 - Nodules on the pupillary border may result in posterior synechiae between the iris and lens.

In the initial stages of an iridocyclitis, the patients IOP will typically be?

1. Higher
2. Lower
3. No change



Signs

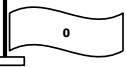
- ▣ IOP must be monitored initially and at subsequent visits
 - usually a patient with acute uveitis will present with low pressure likely due to infiltration of the ciliary body and reduced aqueous secretion
 - the pressure may be elevated secondary to inflammation in the trabecular meshwork or by blockage of the angle by cells and debris
 - in addition treatment with corticosteroids can result in glaucoma due to the patient being a steroid responder.

Signs

- ▣ Every patient with uveitis should have a DFE:
 - posterior inflammation (vitritis) may be overlooked in a diagnosed case of anterior uveitis
 - Macular area should be evaluated especially if there is any decrease in acuity
 - ▣ CME frequently results from anterior uveitis and should be suspected if decreased VA
 - ▣ Epiretinal membranes can form and distort the macular tissue.

Which of the following is/are complications of long-standing uveitis?

1. Band keratopathy
2. Cataracts
3. Glaucoma
4. 2 & 3
5. All of the above



Signs - Long-Standing Uveitis

- ▣ Cataract is a common complication of long-standing uveitis as well as chronic steroid therapy
 - most cataracts are PSC, but cortical opacities may also be seen.
- ▣ CME
- ▣ Glaucoma

Signs - Long-Standing Uveitis

- ▣ Band keratopathy is also seen in chronic conditions such as uveitis
 - it is the deposition of calcium at the level of Bowman's and in severe cases requires chelation therapy or mechanical scraping.

Classification

- Classification is the key to the proper diagnosis and management of the uveitic patient
- Most common classifications
 - Anterior vs. Intermediate vs. Posterior vs. Panuveitis
 - Acute vs. Chronic
 - Granulomatous vs. Non-granulomatous
 - Infectious vs. Autoimmune

Classification of Uveitis

- 4 main questions we need answered
 - Where is the inflammation located?
 - Is disease acute or chronic?
 - Granulomatous or non-granulomatous?
 - Unilateral or bilateral?

Classification of Uveitis

- ▣ Secondary Questions:
 - Demographics of the patient
 - Has this happened before? If so did it respond to treatment?
 - Lung /breathing problems?
 - Rashes/skin problems?
 - Joint problems?
 - Any other systemic/autoimmune diseases?

Answers to the 4 questions

- ▣ 4 answered questions -> easier diagnosis and management
 - Anterior uveitis - etiology ???
 - Acute, unilateral, non-granulomatous anterior uveitis = Idiopathic, HLA-B27 uveitis, herpetic
 - Chronic, bilateral, granulomatous panuveitis = sarcoidosis, syphilis, TB

Duane's Ophthalmology

- ▣ Most commonly encountered uveitic causes:
 1. Traumatic
 2. Post-surgical
 3. Anterior Idiopathic
 4. HLA-B27 associated uveitis
 5. JIA associated uveitis
 6. Fuch's heterochromic iridocyclitis
 7. Posner-Schlossman syndrome
 8. Herpetic anterior uveitis
 9. Pars Planitis
 10. TB/Sarcoid/Syphilis

Anterior Uveitis Work-up

- ▣ After classification, 3 most common groups of uveitis include:
 1. Acute, unilateral (or bilateral), non-granulomatous anterior uveitis
 - ▣ Idiopathic, HLA-B27, Herpetic, Behcet's
 2. Chronic, bilateral (or unilateral), non-granulomatous anterior uveitis
 - ▣ JIA, Fuch's Heterochromic, Idiopathic, Herpetic
 3. Chronic, bilateral (or unilateral), granulomatous anterior uveitis
 - ▣ TB, Sarcoid, Syphilis, VKH

Which condition is NOT an HLA-B27 (+) condition linked with uveitis?

- 1) Ankylosing Spondylitis
- 2) Rheumatoid Arthritis
- 3) Reactive Arthritis (Reiter's Syndrome)
- 4) Inflammatory Bowel Disease



A 32 yo male has a recurrent NG ant. uveitis OD. Upon questioning he states that he has had low back pain for the past 2-3 years. Which test is most important to run with this patient?

1. HLA-B27
2. ESR
3. Chest X-ray
4. Sacro-Iliac joint X-ray

5



1. Acute, unilateral (or bilateral), non-granulomatous anterior uveitis

- ▣ Most common group
 - Idiopathic – most common cause of anterior uveitis
 - HLA-B27 – 2nd most common cause of anterior uveitis – nearly 20 - 50% of acute anterior uveitis pts are HLA-B27+
 - Ankylosing Spondylitis
 - Reactive Arthritis (Reiter's syndrome)
 - Psoriatic Arthritis
 - Inflammatory Bowel Disease
 - Herpetic
 - Behcet's

HLA-B27 (+) Associated Uveitis

- ▣ Acute, rapid onset of unilateral pain and intense photophobia
- ▣ Moderate to severe inflammatory reaction
 - 3-4+ cells
 - Hypopyon
 - Fibrin meshwork
 - Plasmoid aqueous
- ▣ Aggressive treatment important
 - Average tx time = 6-10 weeks

HLA-B27 (+) conditions

- ▣ Ankylosing Spondylitis
 - Low back pain
 - Diagnosis:
 - Abnormal S-I joint X-ray
 - Increased ESR
 - Treatment:
 - Exercise
 - Oral NSAID's

HLA-B27 (+) conditions

- ▣ Reactive Arthritis (Reiter's syndrome)
 - "Can't see, can't pee, can't climb a tree"
 - Conjunctivitis/Uveitis
 - Urethritis
 - Arthritis – lower joints
 - Dermal skin lesions
 - Diagnosis:
 - Elevated ESR
 - Treatment:
 - NSAIDS

HLA-B27 (+) conditions

- ▣ Inflammatory Bowel Syndrome
 - Ulcerative Colitis
 - Crohn's Disease
 - Stomach problems – diarrhea, bloody stools
 - GI referral – tx with diet change and immunosuppressives
- ▣ Psoriatic Arthritis
 - Arthritis upper extremities
 - Characteristic skin lesions

Herpetic Uveitis

- ▣ HSV
 - H/O unilateral red eye
 - Corneal scarring
 - Active corneal disease
 - IOP increase & iris atrophy
- ▣ HZO
 - Characteristic skin lesions
 - Iris atrophy

An 8 yoF presents with a bilateral NG ant. uveitis. The parents report she has had knee problems for the past 3-4 years. Which of the following ocular findings is NOT part of the ocular triad you should look for to confirm your suspicion of JIA?

1. Corneal Ulcer
2. Cataract
3. Band Keratopathy
4. Glaucoma

In the same 8 yoF, which lab test(s) would you run, and what results would confirm your suspicion of JIA?

1. ANA (+), RF (+)
2. ANA (+), RF (-)
3. ANA (-), RF (+)
4. ANA (-), RF (-)
5. HLA-B27 (+)
6. HLA-B27 (-)

2. Chronic, bilateral (or unilateral), non-granulomatous anterior uveitis

- ▣ Most common cause
 - Juvenile Idiopathic Arthritis (JIA)
 - 80% of pediatric uveitis cases are associated with JIA
 - Slow, chronic onset; mild sx's, many chronic signs
 - ANA (+) triples the risk of uveitis – base f/u's on this
 - RF (-)
 - Tx: NSAID's, steroids, immunosuppressives

JIA lab tests

- ▣ ANA – very non-specific test
 - Used to confirm an autoimmune collagen vascular disease
 - Lupus and JIA
 - Weaker associations: Sjogren's, RA, scleroderma, AS, MG
 - 15% of normals have a mildly elevated ANA (diabetics, elderly women)

JIA lab tests

- ▣ RF
 - 80% of RA pts are seropositive
 - Most often JIA patients are RF negative
 - ANA (+) and RF (-) -> significantly increased risk of uveitis in a suspected JIA patient

2. Chronic, bilateral (or unilateral), non-granulomatous anterior uveitis

- ☐ More common causes
 - Fuch's Heterochromic Iridocyclitis
 - Low-grade chronic uveitis with iris heterochromia
 - Usually unilateral – cataract & glaucoma
 - Uveitic eye is usually lighter in color
 - Idiopathic
 - Herpetic

A patient presents with a bilateral ant. uveitis w/ mutton-fat KP's. Which lab/radiology tests should be ordered for a proper diagnosis?

1. PPD & chest X-ray
2. VDRL & FTA-ABS
3. HLA-B27
4. ACE
5. 1, 2, & 4
6. All of the above

3. Chronic, bilateral (or unilateral), granulomatous anterior uveitis

- ☐ Most common causes
 - Sarcoid
 - Syphilis
 - TB

Sarcoidosis

- ☐ Systemic granulomatous inflammation -> unknown etiology – Young, black, females
 - Pulmonary – 95%
 - Ocular – 60-70%
 - Skin
- ☐ Diagnosis
 - Serum
 - ACE, lysozyme, calcium
 - Chest X-ray, Gallium scan, biopsy of granulomas
- ☐ Treatment
 - Immune suppression

Which of the following indicates a patient has an active syphilis infection?

1. PPD
2. FTA-ABS
3. VDRL
4. ACE

Syphilis

- ☐ Infection with spirochete *T. pallidum*
 - Primary stage – Chancre
 - Secondary stage – rash palms of hands/soles of feet
 - Most ocular involvement
 - Latent and Tertiary Stage
- ☐ Diagnosis:
 - RPR or VDRL – general non-treponemal tests
 - FTA-ABS or MHA-TP – specific treponemal tests
- ☐ Treatment:
 - Penicillin

TB

- ▣ Infectious disease caused by *Mycobacterium tuberculosis*
 - Very rare
 - Exposure/Cough/Pulmonary involvement
 - Granulomatous ant uveitis, Choroiditis, phlyctenular keratoconjunctivitis
- ▣ Diagnosis
 - PPD – not useful in uveitis patients
 - Chest X-ray/Sputum culture
- ▣ Treatment
 - Isoniazid, Rifampicin, Ethambutol, Pyrazinamide

Uveitis Work-up Rule of Thumb

- If a patient presents with a uveitis that is:
 - First episode
 - Unilateral
 - Non-granulomatous
 - Mild->moderately severe AND
 - Fairly good health
- = no further work-up required**

Uveitis Work-up Rule of Thumb

- ▣ If the uveitis is:
 - Recurrent
 - Bilateral
 - Severe
 - Granulomatous OR
 - Resistant to standard treatment;
 - AND History does NOT point to a specific condition
- = Non-specific baseline eval**
- ▣ Work-up:

- CBC	- Lyme titer (depending on what area of the U.S.)
- ESR/CRP	- PPD/anergy panel and Chest X-ray
- ANA/RF	- RPR or VDRL and FTA-ABS or MHA-TP
- HLA-B27	- ACE

Lab Work Costs

- | | |
|-----------------------|------------------------------|
| ▣ CBC - \$9 - 12 | ▣ FTA-ABS/MHA-TP - \$18 - 25 |
| ▣ ESR - \$5 - 7 | ▣ Lyme titer - \$24 - 32 |
| ▣ CRP - \$18 - 24 | ▣ Chest X-ray - \$75 - 250 |
| ▣ HLA-B27 - \$36 - 49 | |
| ▣ ANA - \$15 - 21 | |
| ▣ RF - \$8 - 11 | |
| ▣ ACE - \$20 - 28 | |
| ▣ VDRL/RPR - \$6 - 8 | ▣ Total = \$216 - 443 |

Uveitis Work-up Rule of Thumb

- ▣ If the history, symptoms, and/or signs point strongly to a certain etiology, then the work-up should be tailored accordingly
 - that is, the lab tests should be tailored for the condition suspected
 - Ex: Black female with a chronic, granulomatous uveitis - likely chest x-ray, serum ACE and/or lysozyme, PPD, gallium scan of head and neck; consider biopsy of any skin or conjunctival nodule.

Treatment of Uveitis

- ▣ Treat the disease properly
 - Minimize complications of the disease itself
 - Minimize complications of the treatment
- ▣ 2 main drugs/drops
 - Cycloplegics
 - Topical Corticosteroids

Treatment

- ▣ Cycloplegia:
 - used for reduction of pain,
 - break/prevent the formation of posterior synechiae
 - also functions in the reduction of inflammation

Cycloplegics

- ▣ Common cycloplegic agents include:
 - cyclopentolate 1-2% tid for mild-to-moderate,
 - homatropine 5% or
 - scopolamine 0.25% or
 - atropine 1% bid-tid for moderate-to-severe inflammation
- ▣ most common is the use of Homatropine 5% bid

Treatment

- ▣ Steroids: necessary for the treatment of active inflammation
- ▣ Most commonly used:
 - Prednisolone acetate 1% (Pred Forte 1%)
 - Prednisolone phosphate???
 - Loteprednol etabonate 0.5% (Lotemax)
 - Drop, gel, ung

Treatment

- ▣ Durezol (difluprednate ophthalmic emulsion) 0.05%
 - Dosing QID
 - Thought to be as potent or even more potent when compared to Pred Forte q2h
 - Minimal to no shaking of the bottle
 - No BAK



Treatment

- ▣ Topical administration is most common though periocular injections and systemic meds are useful for posterior uveitis and difficult cases
- ▣ Dosing:
 - Pred Forte q1h or q2h
 - Durezol QID
 - Lotemax ung qhs

Treatment

- ▣ **NOTE: it is crucial to taper your steroid treatment!**
 - You will have a rebound inflammation if you simply remove your patient from their steroids...
 - How long???
- ▣ Treat beyond the cell & flare
 - 5-7 days

Rules For Managing Uveitis

1. Remember the classifications.
2. Determine if there is corneal involvement & check IOP.
3. Determine the severity.
4. Is this a chronic problem?
5. Treat strongly.