Dr. John A. McGreal Jr.
Topic: **Uveitis** - The evaluation and discussion on how to easily and appropriately integrate it into the primary care evaluation.

- **Uveitic Classification**
- **Inflammation of the uveal tract**
  - iris, ciliary body, choroid
- **Incidence**
  - 12/100,000
  - Males>Females
  - <20yrs=JRA
  - >50yrs=Systemic
- **Symptoms**
  - Pain, photophobia, lacrimation
■ Uveitis Classification
■ Granulomatous vs. Non-granulomatous
  – infectious vs. inflammatory
■ Acute vs. Chronic
  – one episode vs. recurrent
  – unilateral vs. bilateral
■ Anatomical variations
  – anterior - iritis, iridocyclitis, cyclitis
  – intermediate - pars planitis
  – posterior - choroiditis
  – entire - pan uveitis

■ Ocular Signs of Uveitis
  – Anterior
    ■ cells, flare, KP, ciliary flush, iris nodules, synechiae, cataracts, decreased IOP, vitreous cells
  – Intermediate
    ■ snow banking
  – Posterior
- choroidal nodules, infiltrates, retinitis, optic neuritis, effusions, necrosis
- Medical & Lab Evaluation
- PE / ROS
- CXR, SI-Xray
- CBC with Differential & ESR
- Rheumatoid latex factor & ANA
- Serology - VDRL/RPR, titres
- HLA-B27
- PPD
- ACE
- HIV
- Treatment of Anterior Uveitis
- Topical Corticosteroids
  - Prednisolone acetate (Econopred 1%) q1-4h while awake
  - Dose more in severe disease and less in milder cases
- **Topical mydriatic/cycloplegics**
  - Cyclogyl 1 or 2%, homatropine 2 or 5%, scopolamine ¼%, atropine 1%
  - Avoids synechial adhesions and pain from ciliary spasm

- **Topical Corticosteroid ointments**
  - Decadron, FML, combinations like TobradexST
  - Bedtime applications if needed

- **Oral NSAIDs**

  **Acetaminophen (APAP)**
  - Primary action is analgesia/antipyretic – HA common cold, muscle aches, backache, toothache, menstrual cramps, RA, fever
    - As effective as ASA without the side effects
- No significant anti-inflammatory effects
- Dose: 500mg, 10-15mg/kg q4h children
- Side effects are minimum, not recommended if consume 3 or more alcoholic drinks per day
- Many formulations/combinations with or without narcotics
- Available as *Tylenol*

**Oral NSAIDs**

Acetaminophen (APAP) – commonly used products
- Children’s Tylenol chewable tablet - 120, 325, 650mg
- Children's Tylenol Meltaways - 80mg (grape, wacky watermelon, bubblegum burst)
- Jr. Tylenol Meltaways – 160mg
- Regular Strength Tylenol - 325mg tablet
- Extra Strength Tylenol – 500mg rapid release gels, GoTabs, caplets, EZ tabs
- Extra Strength Tylenol PM – 500mg & 25mg Diphenhydramine, geltab, gelcap, vanilla caplet, and liquid (above dose/15ml)
- Tylenol Arthritis Pain – 650mg caplet or geltab
- Acetaminophen tablet - 325, 500, 650mg
- Tempra (syrup) Liquid - 160/5ml
- Bromo seltzer effervescent - 325mg

**Oral NSAIDs**

**Ibuprofen**
- Significant analgesic effects, fever reduction
  - Corneal insults, trauma, refractive surgery
  - Equivalent to Tylenol #3 (Tylenol with codeine) but not narcotic
- 200, 300, 400, 600, 800mg,
- Children’s Motrin - 100mg/5ml (berry, bubble gum, grape, tropical punch)
- Children’s Motrin Cold – 100mg/15mg pseudoephedrine/5ml (berry)
- Jr. Strength Motrin – chewable (orange or grape) or 100mg caplet
  ■ 200mg is OTC, Q4-6h adults, 4-10mg/kg q8-12h children
- Side effects
  ■ Watch liver function in alcohol consumption
- Available as **Motrin, Motrin IB, Children’s Motrin, Children’s Motrin/Cold Suspension, Jr. Strength Motrin, Nuprin**

- Oral NSAIDs
  - **Naproxen sodium**
    - Significant analgesic effects for RA, OA, AS, JRA, tendonitis, bursitis, acute gout, pain management, dysmenorrhea
      ■ 220mg OTC, 275mg, 550mg(DS) q6-8h, 5-7mg/kg q8-12h as 125mg/5ml
    - Lansoprazole delayed release 15mg (PPI) + naproxen 375mg or 500mg
      ■ Bid dose, each Pac is 7 day treatment
      ■ Reduces risk of NSAID associated gastric ulcer in pts documented to have ulcers and require NSAID treatment
- Do not use in ASA allergy
- Available as *Naprosyn, Prevacid NapraPac 375 or 500, Anaprox, Anaprox DS, Aleve Tablets, Caplets or Gelcaps (OTC), Aleve Cold & Sinus (with pseudoephedrin 120mg extended release/ OTC)*

- **Methylprednisolone**
- **Oral corticosteroid**
- **Indications:** Allergic reactions, dermatologic reactions, stubborn iritis which is slow to respond to intensive topical steroids, Bell’s Palsy
- **Side effects** – avoid in diabetics, otherwise safe for short term applications
- **Dosage**: 6 day, 21 tablet, self-tapered dose form
- **Available as** Medrol 4mg DOSPAK (generic)

- **Immunosuppressants**
- **Ophthalmic uses**
  - Ocular inflammatory diseases (severe) refractory to other standard treatments
    - Behcet’s syndrome
    - Wegener’s syndrome
    - Pemphigoid
    - Mooren’s ulcer
    - Rheumatoid arthritis
    - Scleritis
    - Reiter’s syndrome
    - Systemic lupus erythematosus
    - Dry eye syndrome
    - Graft rejections
    - Uveitis
- Thygeson’s keratitis
- JRA
- VKC

**Immunosuppressant – Cytotoxic Agents**

- Block lymphocyte proliferation in the bone marrow by interfering with cell division (interferes with DNA synthesis) in rapidly growing tissue

**Specific agents**

- Cyclophosphamide
- Azathioprine (Imuran)
- Chlorambucil
- Methotrexate
- 5-Fluorouracil (5-FU) – inhibits fibroblasts/healing/trabeculectomy

**Immune modulators**

- Cyclosporin A

**The Systemic Diseases Associated with Uveitis**
Reiter’s Syndrome (RS)

- **Triad**
  - Non-gonococcal urethritis (NGU)
  - Uveitis/conjunctivitis
  - Arthritis in young men

- **Diagnosis**
  - HLA-B27

- **Treatment**
  - NSAIDs, antibiotics, analgesics

Ankylosing Spondylitis (AS)

- Iridocyclitis common (35%)
  - “plastic” iritis
  - affects youth

- **Diagnosis**
- HLA-B27
- SI-Xray

**Treatment**
- NSAIDs, Analgesics

**Sarcoidosis**

**Granulomatous disease / Chronic / Multisystem**
- common in young black females (20-40)

**Unknown etiology**

**Clinical**
- Pulmonary - shortness of breath, cough
- Skin - erythema nodosum
- Ocular (25%)
  - Uveitis
    - anterior, posterior, chronic
  - Periphlebitis - candle wax drippings
  - Conjunctival granulomas
  - Dry eye

**Sarcoidosis**

**Diagnosis**
- Clinical examination
- Parotid enlargement / facial palsy
- Erythema nodosum

■ Laboratory
- CXR - 90% abnormal
  ■ Hilar adenopathy
- Biopsy - lung, lip, skin, conjunctiva

■ Prognosis
- Good - 50% spontaneous remission

■ Sarcoidosis

■ Treatment
- Based on severity
  ■ 1/3 asymptomatic = no treatment
  ■ 1/3 episodic disease = single treatment course
  ■ 1/3 chronic disease = lifetime treatments
- Ocular
  ■ Topical steroids
- Non-ocular
- Oral steroids
- Syphilis
- Treponema pallidum - spirochete
- 15th Century - “Great Masquerader”
- Stage 1
  - Chancre
- Stage 2
  - Any system, dermatologic rashes and uveitis common
- Stage 3
  - Neurosyphilis - Tabes dorsalis, Argyll-Robertson pupil
  - Aortic arch disease

- Syphilis
- Diagnosis
  - Screening tests (flocculation)
- VDRL, RPR
  - Treponemal antibody tests
- FTA-ABS, MHA-TPA

### Treatment
- Aqueous benzathine PCN g IM one time
- Ceftriaxone 1G IM one time
- Reportable disease

### Lyme Disease

### Lyme, Connecticut

### Trepomemal disease - Borrelia borgdorferi

### Vector - Ixodes damnii tick

### Stage 1
- Erythema chronicum migrans (ECM) - rash

### Stage 2
- Neurologic, ocular, cardiac

### Stage 3
- Arthritis, chronic fatigue

**Lyme Disease**

**Diagnosis**
- Lyme titres
- High index of suspicion

**Treatment**
- Vaccine
- Tetracycline/Doxycycline
- Ceftriaxone
- NSAIDs
- Prevention

**Toxoplasmosis**

**Ubiquitous protozoan** -
Toxoplasma gondii

**Congenital** - 90%

**Vectors** - Cats, uncooked meats, livestock feces

**Clinical manifestations**
- Congenital - chorioretinitis, calcifications, convulsions
- Acquired - active foci of retinitis with floaters

**Diagnosis**
- Toxoplasma titres
- Clinical presentation

**Toxoplasmosis**

**Treatment**
- Peripheral lesions
  - monitor
- Macular threatening lesions
  - Clindamycin 300mg q6h
  - Sulfadiazine 1g qid
  - Pyramethamine 25mg bid/Leucovorin 3mg/wk
  - Prednisone 80-100mg qid
  - Photocoagulation if medical Rx fails
- Prevention
Toxocariasis
Toxocara canis
Vector - visceral worm in dogs
  - 25% soil samples
Visceral form
Ocular form
  - Retinal detachments
  - Vitreous traction and proliferation
  - larva in ocular compartment
  - usually seen in children < 7.5 years
Toxocariasis
Diagnosis
  - ELISA 1:8
Treatment
  - Vitrectomy
  - Retinal detachment repair
  - Antihelmenthic agents
    - Diethylcarbamazine
  - Prevention
• Histoplasmosis - POHS
• Ohio/Mississippi River Valley
• Vector - Bird and bat droppings
• Triad
  – Peripapillary atrophy
  – Peripheral “punched-out” lesions
  – Macular subretinal neovascular membranes
• Prevention
  – Amsler grids to at risk patients
• Histoplasmosis - POHS
• Systemic
  – Amphotericin B, ketoconazole
• Ocular
  – No effective systemic treatment
  – Fluorescein angiography and photocoagulation (MPS)
  – Sub-macular Surgery
■ Pars plana vitrectomy, retinotomy, SRNVM removal, vitreous substitute
■ surprisingly good visual outcomes
  – VEGF drugs like Avastin
■ Rheumatoid Arthritis (RA)
■ Etiology - unknown
■ Epidemiology - 1%, females, 35-50 years at onset
  – Genetic predisposition - HLA-DR4
■ Clinical
  – Articular - synovitis, symmetrical, peripheral joints, AM stiffness > 1 hour, cartilage destruction, bone erosion
  – Extra-Articular - nodules, vasculitis, episcleritis, scleritis, scleromalacia perforans, sicca, Sjogrens.
■ Rheumatoid Arthritis
■ Laboratory
- Rheumatoid factor, anemia, elevated ESR, x-rays

**Treatment**
- Rest & Physical therapy
- NSAIDs & Analgesics
- Steroids
- Gold salts
- Plaquenil
- Cytotoxics
- Surgery

**Juvenile Rheumatoid Arthritis**
**Incidence** - 250,000 cases
**Pauciarticular Type I and II**
- Boys = bad joint disease, mild eye disease
- Girls = bad eye disease, mild joint disease

**Clinical signs**
- band keratopathy
- uveitis
- arthritis
- abnormal growth / development

- Juvenile Rheumatoid Arthritis
- Treatment
  - Ocular
    - topical steroids
    - glaucoma surgery, cataract surgery, corneal surgery
  - Systemic
    - NSAIDs
      - Tolectin (Tolmetin), Motrin (Ibuprofen), Tylenol (Acetaminophen)
    - Plaquenil (Hydroxychloroquine)
      - Visual fields - 3 months
      - Retinal examinations - 3 months
- COMANAGEMENT
Coding for High Risk Medications

CPT / ICD
- 99213 / Rheumatoid Arthritis (714.0), *High Risk Medical Treatment (V58.69) = $50.00*
- 92226-RT, 92226-LT / (714.0, V58.69) = $40.00
- 92083 / (714.0, V58.69) = $70.00
- Total $160.00

Rx: Observation
RTO: 6 Mos

CPT / ICD
- Same as above = $160.00
- Total $320.00

Tuberculosis
- Mycobacterium tuberculosis - chronic bacterial infection
- Transmission - aerial, person to person
- Clinical
  - Pulmonary
  - Extrapulmonary
- Diagnosis
  - PPD
  - Sputum cultures
  - Bronchial washings
  - Chest X-ray

- Treatment
  - Isoniazid (INH) - 9 months for index cases, 6 months for household contacts
  - Ethambutol or Rifampin - index cases

- AIDS
- Etiology - HIV
  - Antibody test
  - Polymerase chain reaction - PCR

- Risk groups
  - Homosexual men (MSM)
  - IV drug users
  - Sexual partners of “at risk” group / unsafe sex practices
  - Blood exposures
  - Children of infected parents
- AIDS
- Non - Ocular Manifestations
  - Pneumocystis carinii pneumonia (PCP)
  - Kaposi’s Sarcoma
  - Herpes simplex
  - Herpes zoster
  - Tuberculosis - MAI
  - Cytomegalovirus
  - Syphilis
  - Toxoplasmosis
  - Neurologic disorders

- AIDS
- Ocular Manifestations - 75%
  - Cytomegalovirus retinitis (CMV)
    - Most common ocular manifestation
    - Tomato-catsup vasculitis and necrosis
- Toxoplasmosis
  - second most common ocular manifestation
- Syphilis
- Kaposi’s Sarcoma
- Herpes zoster - ARN / BARN

**Prevention**

- **HIV Infection**
- **Non-Nucleoside Reverse Transcriptase Inhibitors**
  - Nevirapine (Viramune)
  - Delaviridine (Rescriptor)
  - Efavirenz (Sustiva)
- **Protease Inhibitors**
  - Saquinavir (Invirase)
  - Ritonavir (Norvir)
  - Indinavir (Crixivan)
  - Nelfinavir (Viracept)
■ HIV Infection
■ Nucleoside Reverse Transcriptase Inhibitors
  - Zidovudine (AZT, Retrovir)
  - Stavudine (d4T, Zerit)
  - Didanosine (ddI, Videx)
  - Lamivudine (3TC, Epivir)
  - Zalcitabine (ddC, Hivid)
  - Zidovudine / Lamivudine (Combivir)
■ Combination Therapy – “HAART”
  ■ Case 1: Stubborn Pink Eye
■ CC: Peds consult for “pink eye”
■ HPI: OU/2 weeks/worsening/Ilotycin ointment tid
Med Hx: 17 yo AA male, denies drug use and sexual activity, afebrile

ROS: pediatrician notes a diffuse rash on back

VA: 20/40 OU Perrla: –APD EOM: Nl

SLE: bilateral granulomatous KP, cell +3, flare +2

Fundus: Nl

Case 1: Stubborn Pink Eye
Impression: Bilateral granulomatous uveitis

Plan:
- Econopred 1% q2h WA
- Cyclogyl 1% tid
- D/C Ilotycin
Medical Evaluation: RPR, CXR, PPD
E/M: 99244 ($115), 92285 ($50)
ICD: Uveitis
RTO: 1 wk

Case 1: Stubborn Pink Eye
One week follow up visit
- VA improved to 20/25 OU
- SLE: decreased inflammation
- RPR: POSITIVE
- HIV: POSITIVE
- E/M: 92012 ($60)

Treatment
- Taper topical steroids to q4h WA, D/C cyclogyl, RTO 2 wks
- PCN IM 2.4million units 1X (Peds)
- Consult ID specialist for HIV management
Case 2: New Floaters

CC: PCP consult for “new floaters”

HPI: OD/1 week/worsening/

Med Hx: 37 yo male, HIV positive, afebrile

ROS: HIV “cocktail” for six years

VA: 20/60 OU Perrla: –APD
EOM: Nl

SLE: rare cell

Fundus: round poorly defined chorioretinal lesion with prolific cells in vitreous and overlying haze

Impression: Posterior uveitis, chorioretinitis OD, toxoplasmosis
Plan:
- Econopred 1% q2h WA
- Clindamycin 300mg PO q6h
- PCP/ID consult/retina consult

Medical Evaluation: CD4 cell count

E/M: 99245 ($215), 92250 ($70)

ICD: Toxoplastic chorioretinitis

RTO: 3 wks

Case 2: New Floaters

One week follow up visit
- VA decreased to CF OD
- SLE: increased inflammation
- E/M: 99215 ($150), 92250 ($70)

Treatment
- Topical steroids to q1h WA, RTO 2 wks
- Continue with retina specialist
- Continue with HIV management

Uveitis Pearls
- Don’t always refer
- Be aggressive in early management, taper slowly
- Be suspicious of systemic etiologies and carefully review systems
- Don’t follow daily…they get better slowly
- Allow one episode per patient, worry on two, work up on three
- Use laboratory testing selectively
- Case for true co-management but with primary care medicine
- Don’t forget the supplemental testing (Anterior photos, posterior photos, OCT for macular edema etc)