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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, synechia, 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%, scopalamine 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 erythematosis
    - 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
- Treponemal 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: N1
- SLE: bilateral granulomatous KP, cell +3, flare +2
- Fundus: N1
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
Case 2: New Floaters

- 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: Toxoplasmic 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)