Systemic Evaluation of the Red Eye

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2014 Fall Symposium

What will we cover?
- “The Red Eye”
  - An overview of anterior segment disorders
- Systemic evaluation of the “Red Eye”
  - Blood work-up/tests

Red Eye Etiologies
- Infection
- Inflammation
- Irritation
- Allergy
- Trauma
- Chemicals
- Tumor
- Systemic conditions

Red Eye Disorders
- Lids
- Conjunctiva
- Cornea
- Anterior Chamber
- Misc.
**Red Eye Disorders**

- Orbital tumor
- Viral Conjunctivitis
- Allergic Conjunctivitis
- Chlamydial Conjunctivitis
- Immunogenic Conjunctivitis
- Contact Dermatoconjunctivitis
- Blepharitis
- Chalazion/Hordeolum
- Dacryocystitis
- Cavernous sinus fistula
- Corneal abrasion/FB

**Blepharitis/MGD**

- Inflammation of lid margin
- Lid crusting, redness, telangectasia
- Styes and conjunctivitis frequently associated
- *Staphylococcus* and other skin flora are major causes

**Acute Hordeolum**

- *Acute staph* infection of lid
- External- glands of Zeiss, Moll or lash follicle
- Internal- Meibomian glands

**Chalazion**

- Obstruction of Meibomian gland with extrusion of lipid into surrounding tissue
- Lipogranulomatous reaction, not infectious

** Conjunctivitis**

- Allergic
- Viral
- Bacterial
- Chlymdial
- Chemical/Toxic

** Allergic Conjunctivitis**

- Usually allergy to airborne allergen.
- Mediared by IgE.
- May occur with hay fever, asthma, or rhinitis.
- Associated with itching, hyperemia, chemosis, watery, mucoid discharge

- IgE levels? Patch testing?
Viral Conjunctivitis
- Adenoviral conjunctivitis presents with acute onset of red, watery eyes.
  - Adenovirus types 3, 4, and 7 - pharyngoconjunctival fever (PCF)
  - Adenovirus types 8 and 9 - epidemic keratoconjunctivitis
  - Follicular response worse inferiorly.
  - Hemorrhagic or pseudomembranous response can occur.

Bacterial Conjunctivitis
- Common causes
  - Staph aureus
  - Staph epidermidis
  - Strep pneumoniae
  - Haemophilus influenzae
- Direct contact with infected secretions
- Symptoms
  - Subacute onset
  - Redness
  - Grittiness
  - Burning
  - Mucopurulent discharge

Chlamydial Conjunctivitis
- Veneral infection - Chlamydia trachomatis serotypes D to K
- Sexually active adolescents/adults (+/- genital infection)
- Chronic with a mild keratitis
- Swab/smear
  - Direct monoclonal fluorescent antibody microscopy
  - PCR

Subconjunctival Hemorrhage
- Bright blood red eye.
- Normal vision.
- No pain.
- Usually no obvious cause, often told by others that “eye is red”
- May occur in cases of trauma, or in cases of coughing, vomiting, or straining.

Episcleritis and Scleritis
- Inflammatory conditions
- Redness and tenderness
- Localized or diffuse
- Etiologies: idiopathic, inflammatory (autoimmune), infectious
Episcleritis

- May be benign or signify underlying disease
- Red eye usually localized, but may be diffuse, or nodular
- Dilated episcleral vessels
- Mild tenderness and irritation

Scleritis

- Scleral inflammation with maximal congestion in the deep vascular plexus
- Symptoms/Signs:
  - Pain (often severe boring)
  - Significant ocular tenderness to movement and palpation
  - Watering and photophobia
  - Appearance bluish-red
    - Localized
    - Diffuse
    - Nodular

Scleritis

- Scleritis Evaluation

- Rheumatoid Arthritis
- Systemic vasculitis
- Wegener Granulomatosis
- Vogt Koyangi-Harada disease
- Thyroid disease
- Sarcoidosis
- Systemic Lupus erythematosus
- Inflammatory Bowel Disease
- Multiple Myeloma

Scleritis

- Lymphoma
- Ankylosing Spondylitis
- Polyarteritis nodosa
- Primary Biliary cirrhosis
- Relapsing Polychondritis
- Reiter's syndrome
- Psoriatic arthritis
- Ankylosing spondylitis
- Infectious diseases: TB; syphilis; HSV; HZV; Other
- Idiopathic

Corneal abrasion/ foreign body
Herpes Simplex Keratitis

• Reactivation of latent HSV-type 1
• Migrates down branch of the trigeminal nerve to cornea
• Replicates along the corneal nerves.
• Decreased corneal sensation.

Anterior uveitis

• Symptoms/Signs
  ▪ Pain (ache)
  ▪ Photophobia
  ▪ Perilimbal conjunctival injection
  ▪ Blurred vision
  ▪ Pupil miotic / poorly reactive

• Slit-lamp examination:
  ▪ flare (protein) in AC
  ▪ cells in AC
  ▪ Keratic precipitates (WBC) on the back of the cornea
  ▪ Hypopyon

Anterior uveitis

• Inflammation of the anterior uveal tract
• Idiopathic (70%)
• Associated with systemic disease:
  ▪ Sarcoid
  ▪ Ankylosing spondylitis
  ▪ Inflammatory bowel disease
  ▪ Reiter’s syndrome
  ▪ Psoriatic arthritis
  ▪ Juvenile Chronic arthritis

Anterior uveitis

• Autoimmune and infectious work up
  ▪ CBC with differential
  ▪ ESR
  ▪ Ana
  ▪ Ace
  ▪ HLAB-27
  ▪ VDRL/FTA
  ▪ CXR
  ▪ PPD