The Red Eye

Patrick Sibos, MD

Goal

- Review the common causes of non-traumatic Red Eye (excluding chemical exposure, direct injury to globe)
- Recognize and treat the common form of conjunctivitis.
- Recognize the features of red eye that warrant more caution and referral
- Overview of some of the more unusual causes of red eye.

Non Traumatic Red Eye: Etiology

Benign (treat)
- Conjunctivitis
  - Bacterial
  - Allergic
  - Viral
- Minor
  - Blepharitis
  - Dry eye
  - Styes
  - Sore, Irritation,

Vision Threatening (refer)
- Angle closure
- Keratitis
- Uveitis

Basic Examination

- Vision
- Inspection
  - Conjunctiva
  - Cornea
  - AC
  - Iris
  - Lids
  - Versions
- Pupil

Conjunctival Anatomy

Redness
CONJUNCTIVITIS

- Vision: Normal
- Pupils: Normal
- Cornea: Normal
- Intraocular pressure: Normal.
- NO PAIN ~!!!
- Itchy (allergic); Flu like (viral); discharge (bacterial)

CONJUNCTIVITIS: DISCHARGE

<table>
<thead>
<tr>
<th>Discharge</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purulent</td>
<td>Bacterial</td>
</tr>
<tr>
<td>Clear</td>
<td>Viruses (Preauricular lymphadenopathy signals viral infection)</td>
</tr>
<tr>
<td>Stringy, white mucus</td>
<td>Allergies</td>
</tr>
</tbody>
</table>

BACTERIAL CONJUNCTIVITIS: COMMON CAUSES

- Staphylococcus
- Streptococcus
- Haemophilus

BACTERIAL CONJUNCTIVITIS: TREATMENT

- Topical antibiotic qid x 4 days
- Warm compresses
- Refer if not markedly improved in 4 days

VIRAL CONJUNCTIVITIS

- Watery discharge
- Highly contagious
- Palpable preauricular lymph node
- URI, sore throat, fever common

If pain, photophobia or decreased vision, refer.
ALLERGIC CONJUNCTIVITIS

- Associated conditions: hay fever, asthma, eczema
- Contact allergy: chemicals, cosmetics
- Treatment: topical antihistamines, tears to relieve itching

Refer refractory cases.

Non Traumatic Red Eye: Etiology

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Warning Signs and Symptoms

- Pain ! Tenderness
- Photophobia
- Decreased vision, loss of vision
- Corneal involvement
- Pupillary involvement
- Elevated intraocular pressure
- The presence of any of these warrants referral.

Anterior Segment

Corneal Layers
Keratitis: Symptoms and Signs

- Pain
- Photophobia
- Blurred vision
- Hazy or opacified cornea
- Epithelial defects (Fluorescein positive)

Corneal Ulcer

TOPICAL STEROIDS
### TOPICAL STEROIDS: SIDE EFFECTS

1. Facilitate corneal penetration of herpesvirus.
2. Elevate IOP (steroid-induced glaucoma).
3. Potentiate fungal corneal ulcers

### IRITIS: Symptoms and Signs

- Circumcorneal redness
- Pain
- Photophobia
- Floaters
- Decreased vision
- Miotic pupil; irregular or mishapen pupil
- Associated systemic disease

### Uvea: iris, ciliary body, choroid

### Cells and flare

### Iritis

### Iritis

- Keratic precipitates
- Hypopyon
Complications of Uveitis

Posterior Uveitis

Sarcoidosis

Sarcoidosis

Uveitis

• Infectious
  – Toxoplasmosis
  – Syphilis
  – Lyme
  – Viral
  – TB
  – Herpes zoster
  – Nematodes
  – CMV
  – Toxocara canis (dog roundworm)

• Autoimmune
  – Ankylosing spondylitis
  – Reiter syndrome
  – MS
  – Inflammatory bowel disease
  – Sarcoidosis
  – Vogt Koyanagi Harada
  – Vasculitis
  – Behcets

• Idiopathic
  – Idiopathic
  – Marfan syndrome
  – Lymphoma
  – Ocular ischemia
  – Retinoblastoma

Angle Closure Glaucoma

• Pupillary block
• Angle obstruction
• Increased pressure
• Pain, headache
• Nausea vomiting
• Corneal edema
• Fixed pupil
• Shallow chamber
Angle Closure is an Emergency!

Recognize acute glaucoma, “the great masquerader.”

EMERGENCY!

ACUTE GLAUCOMA: INITIAL TREATMENT

- Pilocarpine 2% gtt q 15 min x 2
- Acetazolamide 500 mg po or IV
- Oral glycerine or isosorbide, 1 cc/kg body weight
- IV mannitol 20% 300-500 cc

RED EYE OVERVIEW

<table>
<thead>
<tr>
<th>Condition</th>
<th>Keratitis</th>
<th>Angle Closure</th>
<th>Uveitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redness</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Pain</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Proptosis</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Slit-lamp</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Red eye</td>
<td>+</td>
<td>-</td>
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Other causes of Red Eye:
- Acute iritis, Uveitis, Retina, Blepharitis, Subconjunctival Hemorrhage, Episcleritis, Chemical, Scleritis.

RED EYE DISORDERS: NON-VISION-THREATENING

- Subconjunctival hemorrhage
- Hordeolum
- Chalazion
- Blepharitis
- Dry eyes
- Corneal abrasions (most)

Red Eye Gravis

- Scleritis, Orbital pseudotumor
- Dysthyroid orbitopathy
- Carotid cavernous fistula
- Orbital cellulitis
- Orbital tumors

Scleritis

- 50% with systemic disease
- Reumatoid arthritis
- Wegeners
- Polyarteritis
- Lupus
- Relapsing polychondritis.
Thyroid Orbitopathy

Carotid Cavernous Fistula

Orbital Cellulitis

Not Conjunctivitis!

- Pain! Tenderness
- Photophobia
- Decreased vision, loss of vision
- Corneal involvement (edema, infiltrate)
- Pupillary involvement (fixed, irreg, small)
- Lid swelling, proptosis, fever
- Elevated Intraocular pressure
- The presence of any of these warrants referral.

Emergent Referrals

- NO DELAYS
  - Orbital cellulitis
  - Angle closure glaucoma
  - Corneal ulcers
- WITHIN 24 HOURS
  - Iritis
  - Scleritis, Orbital pseudotumor
- Treat, refer if it fails to clear
  - Conjunctivitis, Stye, Blepharitis, Dry Eye