Ophthalmic Emergencies

Discussion Topics

- What is an ophthalmic emergency?
- Common reasons for presentation
  - Proptosis
  - Acute eye pain
  - "Red" eye
  - "Cloudy" eye
- Treatment of common diseases

Defining Ophthalmic Emergencies

- "True" emergency
  - Threatens integrity of the globe or visual pathway
    - Proptosis
    - Severe corneal injury
    - Lid laceration
- "Prefergency"
  - What often comes in the door
    - Exophthalmos
    - Superficial ulcer
    - Blindness
    - Anterior uveitis
Defining Ophthalmic Emergencies

Many ocular diseases look identical

- Most ocular disease are urgent
  - Visual pathway is extremely sensitive

Presenting Complaints for Common Ocular Emergencies

<table>
<thead>
<tr>
<th>Acute Eye Pain</th>
<th>Cloudy Eye</th>
<th>Bulging/swollen Eye</th>
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</thead>
<tbody>
<tr>
<td>Corneal ulcer</td>
<td>Glaucoma</td>
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<tr>
<td>Glaucoma</td>
<td>Anterior lens luxation</td>
<td>Buphthalmos</td>
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<td>Anterior lens luxation</td>
<td>Anterior uveitis</td>
<td>Exophthalmos</td>
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<tr>
<td>Anterior uveitis</td>
<td></td>
<td>Hypersensitivity (periocular)</td>
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<table>
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<tr>
<th>Red Eye</th>
<th></th>
<th>Acute Blindness</th>
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<td>Glaucoma</td>
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<tr>
<td>Orbital disease</td>
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<td>Retinal disease</td>
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<tr>
<td>Scleritis</td>
<td></td>
<td>- SARDS, detachment, etc.</td>
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<tr>
<td>Uveitis</td>
<td></td>
<td>Optic neuritis</td>
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<tr>
<td>Conjunctivitis</td>
<td></td>
<td>Optic chiasm disease (tumor)</td>
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<tr>
<td>Keratitis (ulcers)</td>
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Emergency: Proptosis
### Prognostic Indicators
- Presence of vision = good
- Normal PLR = good
- Damage to ≥ 3 extraocular muscles = bad
- Hyphema = bad
- Desiccated cornea = bad

### Overall Prognosis
- Brachycephalic dogs
  - Guarded (30% regain vision)
- Any other animal
  - Grave (pretty much 0%)

### Treatment
- Globe reduction + tarsorrhaphy
- Topical antibiotics
  - Drops are easiest
  - Systemic antibiotics
    - Torn conjunctiva and rectus muscles
- Anti-inflammatories
  - Prednisone is best
- Analgesics
  - Tramadol, gabapentin, etc.
- E-collar

Correct placement of sutures is crucial

1. Dilute betadine
2. Lubricate
3. Lidocaine block
4. Pre-place sutures
5. Reduce globe
6. Tie sutures
Proptosis

Corneal Ulcers

Causes of corneal ulcers
- Decreased corneal protection
  - Tear film problems
    - Quantitative KCS
    - Qualitative KCS
  - Cystic problems
    - Lagophthalmos
    - CN VII paralysis
    - CN V paralysis
    - Ectropion
- Increased epithelial cell turnover
  - Endogenous
    - Entropion
    - Ectopic cilia
    - Distichia
    - Trichiasis
    - Eyelid tumors
  - Exogenous
    - Trauma
    - Foreign body
    - Infection
    - Herpesvirus


Superficial Ulcer

Diagnostic Tests
- STT of both eyes
- Fluorescein stain
- +/- eye pressures

Treatment
- Antimicrobial TID or more
  - Neo/poly/bac ointment
  - Neo/poly/gram solution ($$$)
- Pain control if needed
  - 1% Atropine (0-24 hours)
  - Systemic NSAID
- E-collar if needed
- Re-evaluate in 5-7 days
Deep Ulcer

**Diagnostic Tests**
- STT of contralateral eye
- Fluorescein stain
- +/- eye pressures

**Treatment**
- Antimicrobials (q 2-6 hours)
  - Fluoroquinolones
  - +/- Cefazolin 5.5%
  - If lots of gram+ bacteria
- Anti-proteolytics (q1 - 6 hours)
  - Serum
  - 1% EDTA
- Pain control
  - 1% Atropine (q12-24 hours)
  - Systemic NSAID
  - Tramadol
- E-collar if needed
- Re-evaluate in 2-3 days

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Emergency

Primary Glaucoma

**Common Signalment**
- 3-9 year old Cocker Spaniel, Basset Hound, Mixed breed

**Clinical signs**
- Acute redness, pain, corneal edema

**Emergency treatment**
- Latanoprost
- Dorzolamide+timolol
  - If no response
  - Aqueocentesis (27-30g needle)
  - Mannitol IV at 1-2 g/kg

**Prognosis**
- Guarded to poor

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Must rule out an anterior lens luxation before giving latanoprost
Emergency  Glaucoma

Secondary Glaucoma
- Most common etiologies
  • Anterior lens luxation
  • Terrier breeds
  • Anterior uveitis (many DDx)
  • Previous cataract surgery
  • Chronic low-grade uveitis
- Clinical signs
  • Chronic (maybe "acute") redness, pain, corneal edema
- Emergency treatment
  • Treat underlying cause
  • Dorzolamide + timolol TID-QID
- Prognosis
  • Poor → difficult to lower IOP

Emergency Anterior Lens Luxation

Diagnostic Tests
- +/- STT
- Fluorescein stain
- Eye pressures

Treatment
- Trans-corneal reduction
  • If successful, give latanoprost q12 hrs for persistent miosis
- Surgical extraction
  • Required if manual reduction not successful

Trans-corneal reduction of an anterior lens luxation
Buphthalmos

Clinical signs
- Chronic red eye
- High IOP
- Blind in affected eye
- Enlarged globe
- Lens subluxation
  - Aphakic crescent

Treatment
- Enucleation
- Exenteration
- Chemical ciliary body ablation

Exophthalmos

Orbital Abscess
- Acute and often painful
- Rapid response to therapy
- Often young age
- Stick chewer?

Orbital Neoplasia
- Chronic, slowly progressive, and typically non-painful
- Typically older age
- +/- decreased nasal air flow

Urgency

Exophthalmos

Orbital Abscess
- Acute and painful
- Rapid response to therapy
- Treatment:
  - Clavamox or Simplecef x 3-4 weeks
  - Systemic NSAID x 2-3 weeks
  - Lubrication if keratitis present

Orbital Neoplasia
- Chronic, slowly progressive, and typically non-painful
- Typically older age
- +/- decreased nasal air flow
Prognostic indicators
• Caused by orbital mass
  • Abscess, neoplasia, mucocele
• Typically maintain vision
• Decreased retropulsion
• Globes are same size

Overall prognosis
• Caused by chronic glaucoma
• Blind & lose light perception
• Typically normal or near-normal retropulsion
• Globes are different sizes

Exophthalmos vs Buphthalmos

Urgency Anterior Uveitis

Diagnostic Tests
• +/- STT
• Fluorescein stain
• Eye pressures
  • Should be low
  • ≤ 7 mmHg in affected eye
  • ≥ 5 mmHg between eyes
  • If high teens, developing secondary glaucoma
• +/- systemic workup
  • Not necessary on emergency

“Classic” Clinical Signs
- Episcleral injection
- Miosis
- Corneal edema
- Low IOP

Treatment
• Topical steroids TID-QID
  • Neopolydex 0.1%
  • Prednisolone acetate 1%
• Atropine 1% q12-24 hours
  • Be cautious if IOP is in teens
• Systemic NSAIDs
  • Corticosteroids not recommended due to potential of infectious or neoplastic disease
• +/- topical NSAIDs
Urgency  Unilateral Hyphema

Diagnostic Tests
- +/- STT
- +/- fluorescein stain
- Eye pressures
  - If high teens, developing secondary glaucoma
- Systemic workup
  - Possibly rodenticide toxicity

Differential Diagnoses
- Coagulopathies
- Anterior uveitis
- Intraocular neoplasia
- Retinal detachment

Emergency  Bilateral Hyphema

Diagnostic Tests
- +/- STT
- +/- fluorescein stain
- Eye pressures
  - If high teens, developing secondary glaucoma
- Systemic workup
  - Possibly rodenticide toxicity

Differential Diagnoses
- *** Coagulopathies ***
- Anterior uveitis
- Intraocular neoplasia
- Retinal detachment

Urgency  Acute Blindness

Diagnostic Approach
- Assess Vision
  - Menace, maze test, cotton balls
  - Visual placing
  - Dazzle reflex
    - Cortical response
- Ophthalmic exam
  - Opacity that impairs vision?
  - Normal fundus?
  - Normal PLRs?
- Neurolocalization
  - PLRs are most helpful
SARDS (Sudden Acquired Retinal Degeneration Syndrome)

**Suggestive Findings**
- Bilateral blindness
- History of:
  - Polyuria, polydipsia, polyphagia, weight gain
  - Dachshunds
  - Normal fundus
  - No neurologic disease

**Diagnostic Tests**
- Electroretinogram
  - Normal = brain disease

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**Urgency Retinal Detachment**

**Suggestive Findings**
- Lack of menace response
- Marcus-Gunn pupil
  - Afferent denervation
- Anisocoria
  - Affected eye = larger pupil
- “Abnormal” fundus

**Diagnostic Tests**
- Blood pressure measurement
  - Should be >200 mmHg
- Systemic workup
  - DDX: Systemic mycosis, toxoplasmosis, neoplasia, etc.
**Urgency Retinal Detachment**

*Exudative Retinal Detachment*

- Blindness in different environment
- Signalment
  - Inherited in Shih Tzu, Miniature Poodle, Labrador
- Night blindness
- +/- mydriasis
- +/- cataract formation
- "Abnormal" fundus
  - Hyper-reflective
  - Small blood vessels

**Diagnostic Tests**
- Fundus evaluation

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**Not an emergency Retinal Degeneration**

**Suggestive Findings**
- Blindness in different environment
- Signalment
- Inherited in Shih Tzu, Miniature Poodle, Labrador
- Night blindness
- +/- mydriasis
- +/- cataract formation
- "Abnormal" fundus
  - Hyper-reflective
  - Small blood vessels

**Diagnostic Tests**
- Fundus evaluation

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**Urgency Optic Neuritis**

**Suggestive Findings**
- Unilateral or bilateral blindness
- +/- neurologic disease
- Mydriasis & absent PLRs
  - Pupils may be minimally responsive to light
- May have dazzle reflex
- "Abnormal" fundus

**Diagnostic Tests**
- Electroretinogram (normal)
- Systemic work up
- MRI + CSF evaluation
**Ocular & Periocular Disease**

**Urgency**

**Diagnostic Tests**
- +/- STT
- Fluorescein stain
- Tonometry
- +/- skull radiographs
- +/- CT

**Treatment**
- Topical antibiotics (ointment)
- Systemic antibiotics
- Systemic anti-inflammatories

**Prognosis**
- Good with no intraocular damage
- Poor if hyphema present

**Ocular & Periocular Trauma**

**Urgency**

**Diagnostic Tests**
- +/- STT
- Fluorescein stain
- Tonometry
- +/- skull radiographs
- +/- CT

**Treatment**
- Topical anti-inflammatories
- Systemic anti-inflammatories
- Dexamethasone SP → IV

**Prognosis**
- Good to excellent

**Hypersensitivity Reactions**

**Not an emergency**

**Diagnostic Tests**
- Good history
- +/- STT
- Fluorescein stain
- +/- Tonometry

**Treatment**
- Topical anti-inflammatories
- Systemic anti-inflammatories
  - Dexamethasone SP → IV

**Prognosis**
- Good to excellent
Questions?