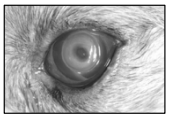
Ophthalmic Emergencies

Jamie W. Herrmann, DVM
Ophthalmology Intern

Discussion Topics

- What is an ophthalmic emergency?
- Common reasons for presentation
  - Proptosis
  - Acute eye pain
  - "Red" eye
  - "Cloudy" eye
  - "Bulging" or "swollen" eye
  - Acute blindness
  - Ocular & periocular trauma
- Treatment of common diseases

Defining Ophthalmic Emergencies



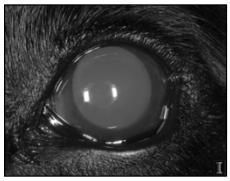
- "True" emergency
  - Threatens integrity of the globe or visual pathway
    - Proptosis
    - Glaucoma
    - Lid laceration
    - Severe corneal injury
    - Anterior lens luxation
- "Prefergency"
  - What often comes in the door
    - Exophthalmos
    - Blindness
    - Superficial ulcer
    - Anterior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

Acute Eye Pain
- Corneal ulcer
- Glaucoma
- Anterior lens luxation
- Anterior uveitis

Red Eye
- Glaucoma
- Orbital disease
- Scleritis
- Uveitis
- Conjunctivitis
- Keratitis (ulcers)

Cloudy Eye
- Glaucoma
- Anterior lens luxation
- Anterior uveitis

Bulging/swollen Eye
- Glaucoma
- Buphthalmos
- Exophthalmos
- Hypersensitivity (periocular)

Acute Blindness
- Glaucoma
- Retinal disease
  - SARDS, detachment, etc.
- Optic neuritis
- Optic chiasm disease (tumor)

Emergency Proptosis

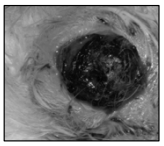


Emergency

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%)

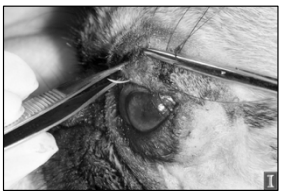


Emergency

Proptosis

Treatment

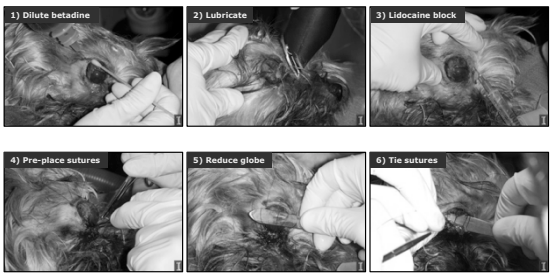
- Globe reduction + tarsorrhaphy
- Topical antibiotics
  - Drops are easiest
- Systemic antibiotics
  - Torn conjunctiva and rectus muscles
- Anti-inflammatories
  - Prednisone is best
- Analgesics
  - Tramadol, gabapentin, etc.
- E-collar



Correct placement of sutures is crucial

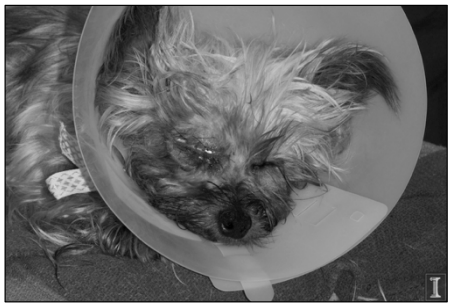
Emergency

Proptosis

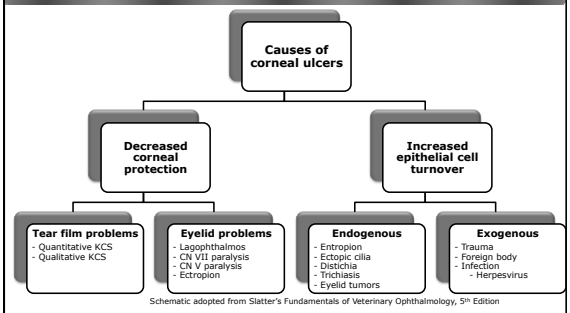


Emergency

Proptosis



Corneal Ulcers



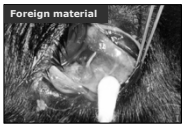
Schematic adopted from Slatter's Fundamentals of Veterinary Ophthalmology, 5th Edition

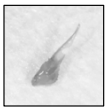
Urgency

Superficial Ulcer

Diagnostic Tests

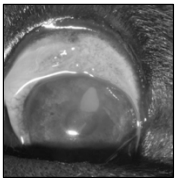
- STT of both eyes
- Fluorescein stain
- +/- eye pressures





Treatment

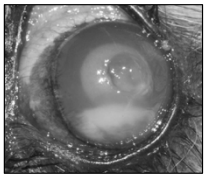
- Antimicrobial TID or more
  - Neo/poly/bac ointment
  - Neo/poly/gram solution ($$$)
- Pain control if needed
  - 1% Atropine (q12-24 hours)
  - Systemic NSAID
- E-collar if needed
- Re-evaluate in 5-7 days

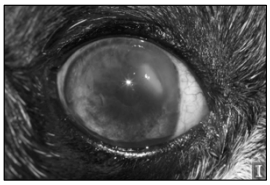


Emergency Deep Ulcer

Diagnostic Tests

- STT of contralateral eye
- Fluorescein stain
- +/- eye pressures





Emergency Deep Ulcer

Treatment

- Antimicrobials (q 2-6 hours)
  - Fluoroquinolones
  - +/- Cefazolin 5.55%
    - 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









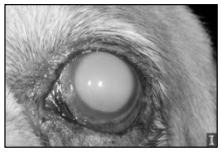
Emergency Glaucoma

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

  } Alternate every 5 minutes for 30-45 minutes

  - If no response
    - Aqueocentesis (27-30g needle)
    - Mannitol IV at 1-2 g/kg
- Prognosis
  - guarded to poor



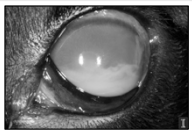
Must rule out an anterior lens luxation before giving latanoprost

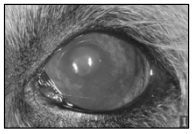
Emergency Glaucoma

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

Latanoprost contraindicated & will make anterior lens luxation worse





Emergency Anterior Lens Luxation

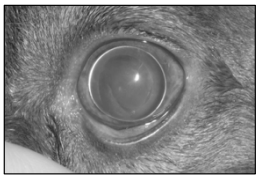
Diagnostic Tests

- +/- STT
- Fluorescein stain
- Eye pressures

Latanoprost contraindicated & will make anterior lens luxation worse

Treatment

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



Emergency Anterior Lens Luxation

Trans-corneal reduction of an anterior lens luxation



Not an emergency

Buphthalmos

Clinical signs

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



Treatment

- Enucleation
- Exenteration
- Chemical cilary body ablation

Urgency

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



Exophthalmos vs Buphthalmos

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



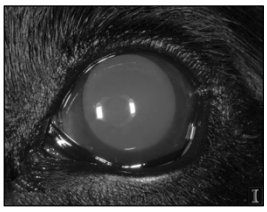
Urgency Anterior Uveitis

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
- Corneal edema
- Miosis
- Low IOP



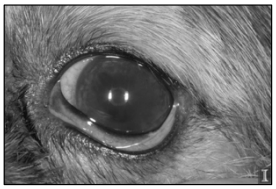
Urgency Anterior Uveitis

Treatment

- Topical steroids TID-QID
  - Neo/poly/dex 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

"Classic" Clinical Signs

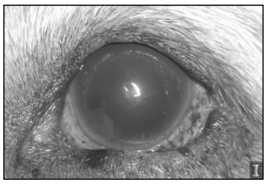
- Episcleral injection
- Corneal edema
- Miosis
- Low IOP



Urgency Unilateral Hyphema

Diagnostic Tests

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



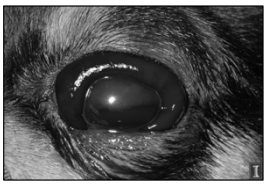
Differential Diagnoses

- 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



Not really an emergency SARDS

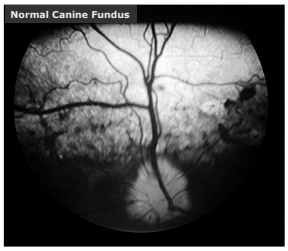
Sudden Acquired Retinal Degeneration Syndrome

Suggestive Findings

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

Diagnostic Tests

- Electroretinogram
  - Normal = brain disease



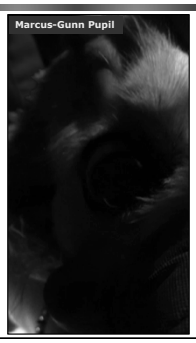
Urgency Retinal Detachment

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.

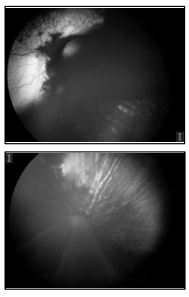


Urgency Retinal Detachment

Normal Feline Fundus

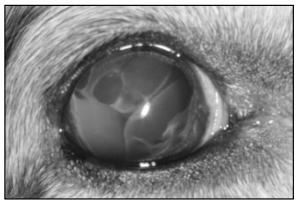


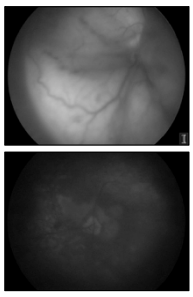
Retinal Detachment



Urgency Retinal Detachment

Exudative Retinal Detachment

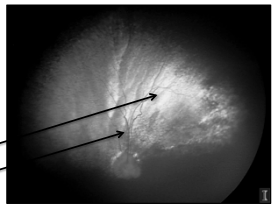




Not an emergency Retinal Degeneration

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



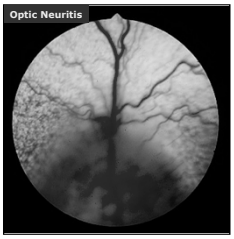
Diagnostic Tests

- Fundus evaluation

Urgency Optic Neuritis

Suggestive Findings

- Unilateral or bilateral blindness
- +/- neurologic disease
- Myrdiasis & 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

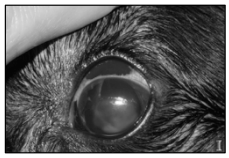
Urgency Ocular & Periocular Disease



Urgency Ocular & Periocular Trauma

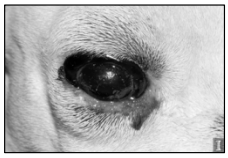
Diagnostic Tests

- +/- 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

Not an emergency Hypersensitivity Reactions

Diagnostic Tests

- Good history
- +/- STT
- Fluorescein stain
- +/- Tonometry



Treatment

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

Prognosis

- Good to excellent

Questions?