Introduction
- Complete medical history
  - Weight loss, anorexia, vomiting, diarrhea, animal’s environment (exposure to other animals, mycotic organisms), travel history
- Complete physical examination
- Bloods: CBC/Chem/T4/Serology
- Radiographs—Thoracic for mycotic, neoplastic conditions

Etiologies
- Infectious
  - Bacterial, Viral, Fungal, Rickettsial, Protozoal, Parasitic, Algal
- Metabolic/Circulatory
  - Diabetes, Thyroid diseases, Hypertension
- Neoplastic
  - Lymphoma, metastatic tumors
- Toxic
  - Drugs, nutritional disorders
- Immune-mediated
  - Uveodermatologic syndrome

Uveitis—Differential Diagnosis

Infectious
- Fungal
  - Blastomycosis
  - Histoplasmosis
  - Cryptococcus
  - Coccidiomycosis
  - Candidiasis
- Viral
  - FeLV/ FIV
  - FIP
  - Canine Distemper
  - Adenovirus
- Algal (Prototheca)
- Bacterial
  - Brucellosis
  - Bartonella
  - Babesia
- Protozoal
  - Toxoplasmosis
  - Leishmaniasis
- Rickettsial
  - Ehrlichia
  - RMSF
- Parasitic
  - Dirofilaria
  - Toxocara

Uveitis—Differential Diagnosis
- Immune Mediated
  - Uveodermatologic syndrome
  - ERU
- Lens—induced (phacolytic)
  - Traumatic
    - Lens capsule rupture
    - Blunt trauma
    - Penetrating trauma
  - Toxic
  - Neoplastic
    - Lymphoma
    - Melanoma
  - Metabolic
    - Systemic hypertension
    - Hyperlipidemia
  - Idiopathic

**Blastomycosis**
- Blastomyces dermatitidis
  - Dimorphic fungi
- In soil a saprophytic mycelial form
  - Producing infective spores (conidia)
- In tissues is a budding yeast 5–20 μm
  - Thick, double-contoured wall
- Endemic to various river valleys
  - North America—“Blasto Belt”

**Blastomycosis**
- Establishes in lungs (inhalation)
  - Disseminates via lymph nodes or blood to skin, eyes, bones, lymph nodes, brain and testicles
- Lymphadenopathy, fever, harsh lung sounds, draining skin lesions, cough, and emaciation

**Blastomycosis—Treatment**
- Itraconazole
- Fluconazole
- Ketoconazole
- Amphotericin B
- Topical/Systemic Corticosteroids

**Coccidiomycosis**

**Cryptococcus**
- Diagnosis
  - Cytologic—India ink, Gram’s stain, Wright’s stain
    - Cerebral spinal fluid, vitreous humor
    - CSF: neutrophilic pleocytosis, increased protein, organisms seen in 60% of positive samples
  - Cryptococcal capsular antigen test
    - Using latex agglutination from serum or CSF
  - Fungal culture
  - Usually poor prognosis for dogs

**Histoplasmosis**
- Dimorphic fungus Histoplasma capsulatum
  - Soil saprophyte
- Life cycle similar to blasto and coccidiomycosis
- Ocular lesions not as severe as other fungi
- Most infections are subclinical respiratory infections
- If disseminated
- digestive tract and reticuloendothelial system
  - Anterior uveitis
    - pyogranulomatous multi-focal to coalescing lesions
  - Optic neuritis
  - Retinal detachment

**Toxoplasmosis**
- Obligate intracellular protozoal parasite
- Felines are the only known definitive hosts
- Three infective stages of T gondii recognized:
  1) tachyzoites (the rapidly multiplying form)
  2) bradyzoites (tissue cyst form)
  3) sporozoites (within oocysts).
- Anterior uveitis, retinitis, and choroiditis
- Less common lesions
  - extraocular myositis and optic neuritis

**Ehrlichiosis**
- Ehrlichia canis
- Tick vector
- Three disease stages:
  1) acute (1–3 weeks),
  2) subclinical (average of 11 weeks)
  3) chronic
- Platelet deficiency, vasculitis (or both)
- Ocular hemorrhages and mucosal petechial hemorrhages
- Natural infection: 10–15% have ocular lesions
- Ocular signs may be present in all stages
- Anterior uveitis
- Optic nerve may be inflamed and retinal vessels may seem engorged with perivascular infiltrates and papillary hemorrhages
- Retinal hemorrhages common and retinal detachments occur with exudates

**RMSF**
- Rickettsia rickettsii—similar ocular lesions to Ehrlichia canis, but milder
- Tick-borne
- Conjunctivitis, chemosis, retinal vasculitis, mild anterior uveitis, petechiation
- Systemic thrombocytopenia, anemia, vasculitis, arthritis

**Lyme Disease**
- Borrelia burgdorferi
- Clinical cause of uveitis in dogs
- Tick-borne
- Treatment:
  - Doxycycline
- Prevention
  - Tick repellants
  - Vaccination?

**Canine Lymphosarcoma**
- Most common metastatic neoplasia to the canine eye and cause for neoplastic uveitis in dogs
- Usually bilateral anterior uveitis
- Also common
  - Posterior uveitis, retinal infiltrates and detachment
• Thickened third eyelids

Diagnosis
• Lymph node biopsy
• Splenic/liver aspirate

Diabetes Mellitus
• Young dogs—most susceptible to developing cataracts
• Rare in cats
• Increased blood sugar overwhelms hexokinase
  o Polyols are formed and accumulate in the lens
  o Resulting in an osmotic gradient
• Rapidly developing cataracts (within 72 hrs)
  o often have deep clefts

Diabetes Mellitus
• Evaluate blood glucose and blood fructosamine
• Prior to surgery:
  o control accompanying uveitis
  o perform an electroretinogram and ocular ultrasonography
• Post-op inflammation control is necessary
  o oral and topical nonsteroidals
  o may need treatment for 2 or more months

Uveo-Dermatologic Syndrome
• An immune-mediated condition
  o poliosis, vitiligo, and severe bilateral uveitis.
  o akitas, Siberian huskies, & samoyeds.
• Severe uveitis, blindness, retinal detachment, and glaucoma
• Depigmentation of eyelids, lips, and nose.
• No specific diagnostic test
  o Classic clinical signs and breed
• Systemic oral corticosteroids and azathioprine
  o azathioprine takes up to 4 weeks to become effective
  o monitor WBC count and liver enzymes carefully
• Topical prednisolone

Sudden Acquired Retinal Degeneration
• A syndrome of acute blindness of unknown etiology
• Acute vision loss
  o Initially ± retinal degenerative changes
  o Over time the retina will exhibit gross degenerative changes
• Absent pupillary light responses
• Diagnostics
  o Electroretinogram (ERG) waveform is extinguished
  o Rule out Cushing’s disease
• Therapy
  o No therapy to date to reverse blindness
  o Treat for Cushing’s if indicated.
• Unfortunately, vision loss is almost always permanent

Hypertensive Retinopathy
• Occurs in both dogs and cats; much more common in cats
• Ocular—most common findings are hyphema and retinal detachment
  o Fundus exam often reveals tortuous vessels, retinal hemorrhages, and focal degeneration
• Systolic readings greater than 160–180 mmHg

• Treatment
  o Amlodipine 0.625mg orally daily
  o Topical anti-inflammatories (steroidal and nonsteroidal), oral antihypertensive medication,
  o oral dichlorphenamide (Daranide® 1–2 mg/lb PO BID for up to 30 days) for its effect on improving the chance for retinal reattachment

• Prognosis—dependent upon time of detachment

Feline Infectious Diseases
• Feline Leukemia Virus
• Feline Immunodeficiency Virus
• Feline Infectious Peritonitis
• Feline Herpes Virus
• Systemic Fungal Diseases
• Toxoplasmosis

Feline Immunodeficiency Virus
• Systemic
  o Lymphoma
  o Immunosuppression
    • leukopenia, lymphopenia, anemia, weight loss, persistent diarrhea, opportunistic and secondary infections
  o Coinfection
    • Chlamydia psittaci prolonged infection
    • Toxoplasma gondii increased severity

• Ocular
  o Usually due to lymphosarcoma
  o Pars planitis, retinopathy, conjunctivitis, orbital disease

Feline Infectious Peritonitis
• Clinical Signs: Systemic
  o Anorexia, weight loss, lethargy, mild fever, mild URI or intestinal signs
  o EFFUSIVE
    • Ascites, thoracic effusion, pericardial effusion, abdominal masses (adhesions or mesenteric lymphadenopathy)
  o NON-EFFUSIVE
    • Granulomatous lesions in spleen, liver, kidney, omentum, lungs, and/or LNs
    • Typically develop ocular signs
    • May develop CNS signs

Feline Infectious Peritonitis
• Clinical Signs: Ocular
  o Anterior and posterior uveitis
  o Bilateral granulomatous anterior uveitis with chorioretinitis
  o “Mutton-fat” keratic precipitates
  o Secondary glaucoma, cataract formation, lens luxation

Feline Herpes Virus
• Acute and Chronic FHV-1
  o Initially colonizes the oral and naso-pharyngeal mucosa and conjunctiva
  o Corneal ulceration occurs with viral replication in corneal epithelium
  o Stromal keratitis with deep neovascularization occurs with immune response to viral antigen
• Latent FHV-1
  o Virus localizes in trigeminal ganglion, can migrate down trigeminal nerves to cornea and conjunctiva
Feline Herpes Virus Clinical Signs

- Systemic
  o Upper respiratory infection with fever, lethargy, inappetence
- Ocular
  o Conjunctivitis with serous to purulent discharge
  o Corneal ulceration (dendritic, Rose Bengal +)
  o Symblepharon
  o Stromal keratitis
  o Sequestra
  o Possible anterior uveitis

Feline Herpes Virus Therapy

- Topical antivirals:
  o Idoxuridine
  o Vidarabine (Vira-A®)
  o Trifluridine (Viropic®)
- Topical antibiotics for secondary ocular infections
- L-lysine 250–500mg PO BID