

Ocular Manifestations of Systemic Diseases

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Categories of Disease: **DAMNIT**

- Degenerative
- Autoimmune
- Metabolic
- Neoplastic/Nutritional
- Infectious/Inflammatory/Immunologic
- Toxic/Traumatic

Autoimmune Disorders

Immune-mediated Thrombocytopenia

- Subconjunctival hemorrhage
- Hyphema
- Retinal hemorrhage

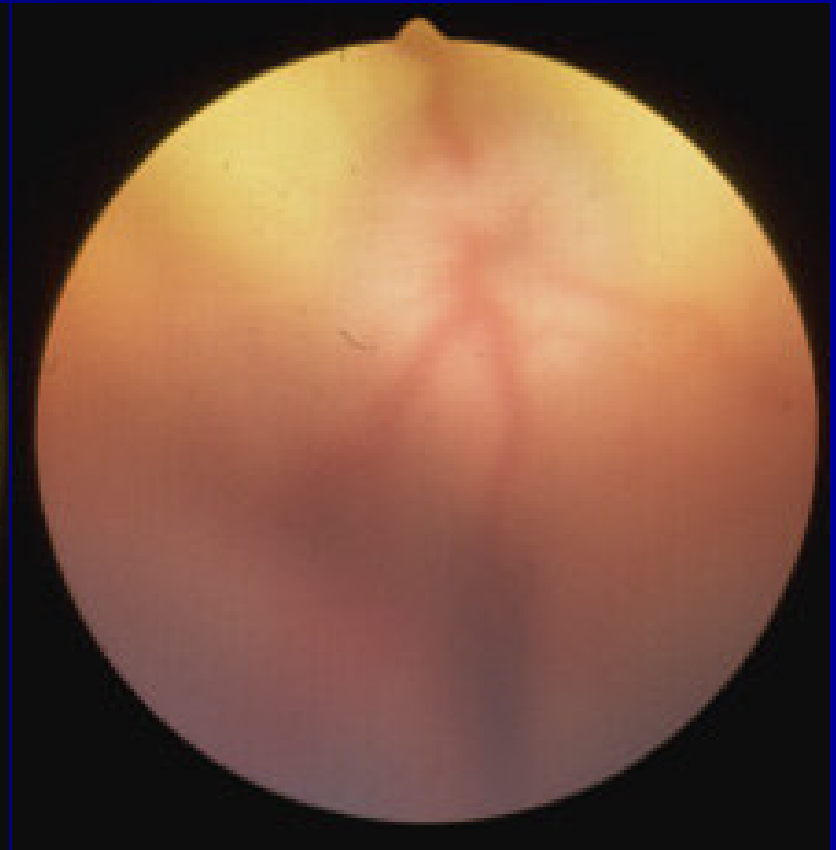
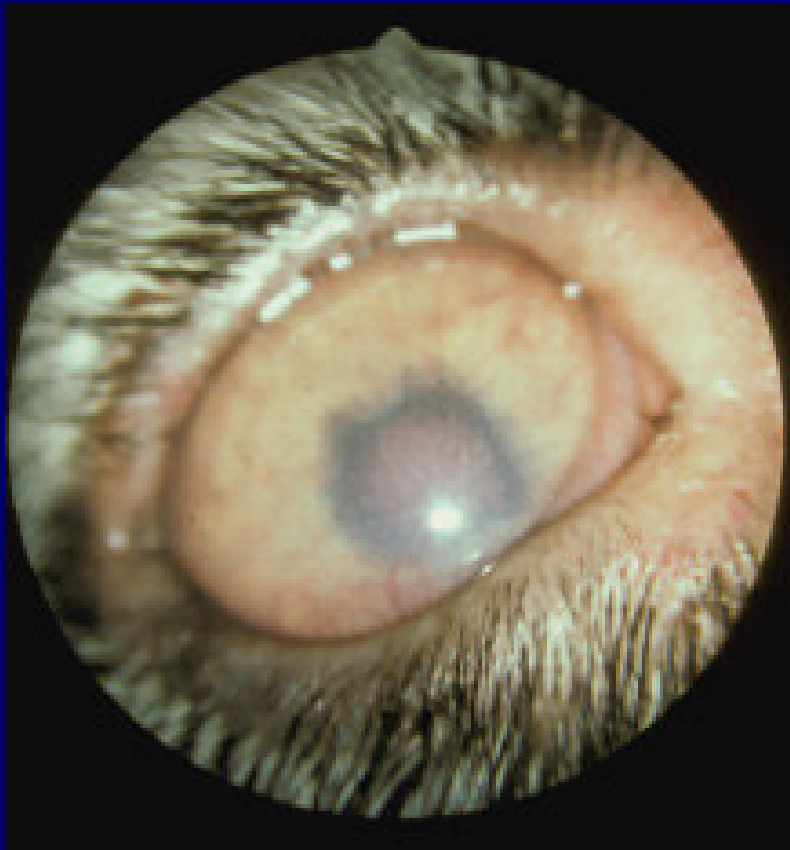


Uveodermatologic Syndrome (VKH)

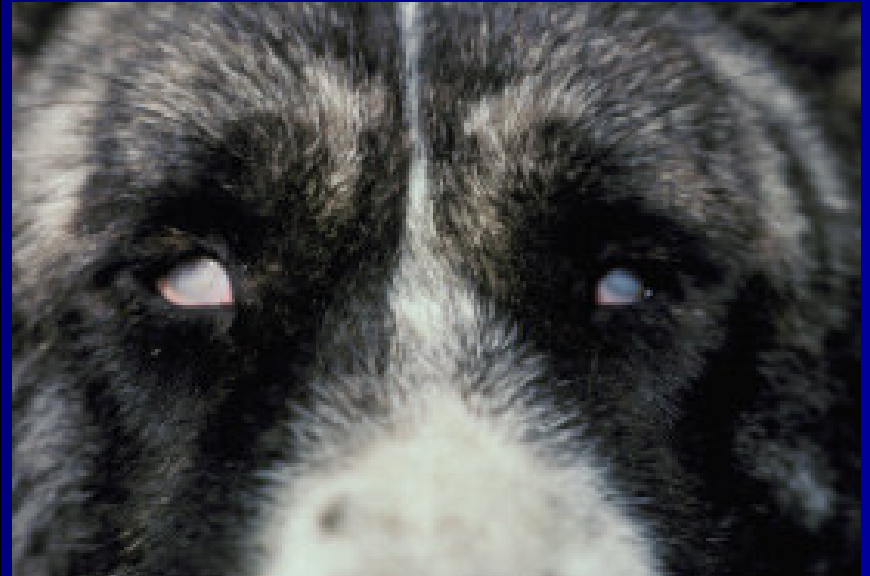
- Destruction of dermal and uveal melanocytes
- Young, male dogs: Akita, Samoyed, Siberian husky, etc
- Bilateral panuveitis
- Vitiligo, poliosis



Uveodermatologic Syndrome (VKH)



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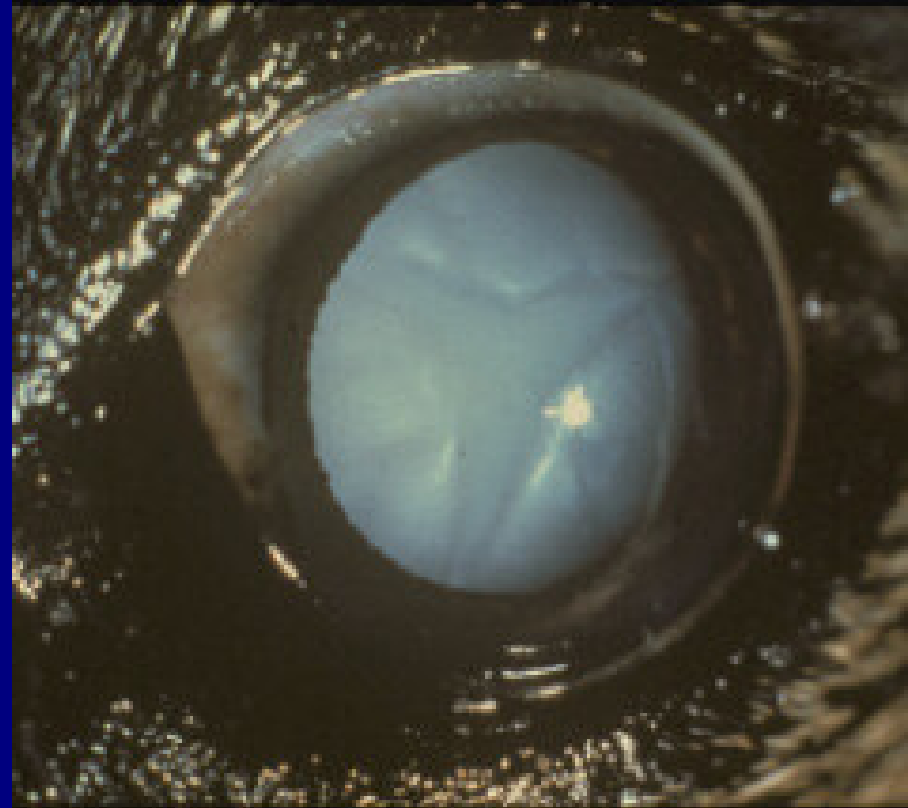


Courtesy of Dr. Vidal, posted on VIN

Metabolic Disease

Diabetes mellitus

- Rapid cataract development
- One study identified cataract in 66%
- Equatorial origin, progressing to entire lens in 2-3 weeks



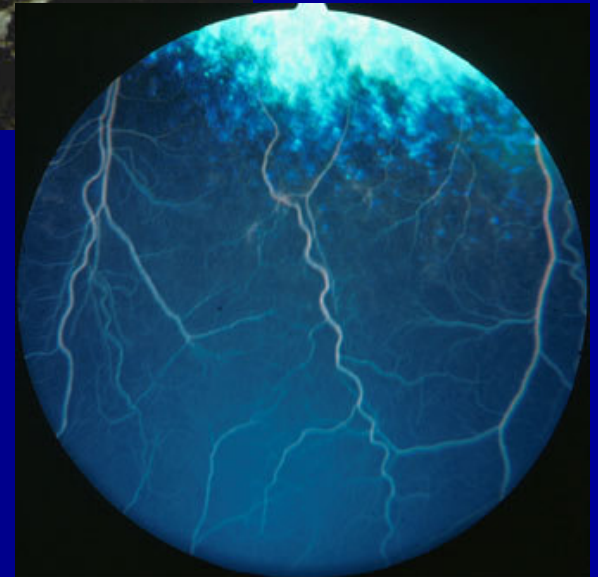
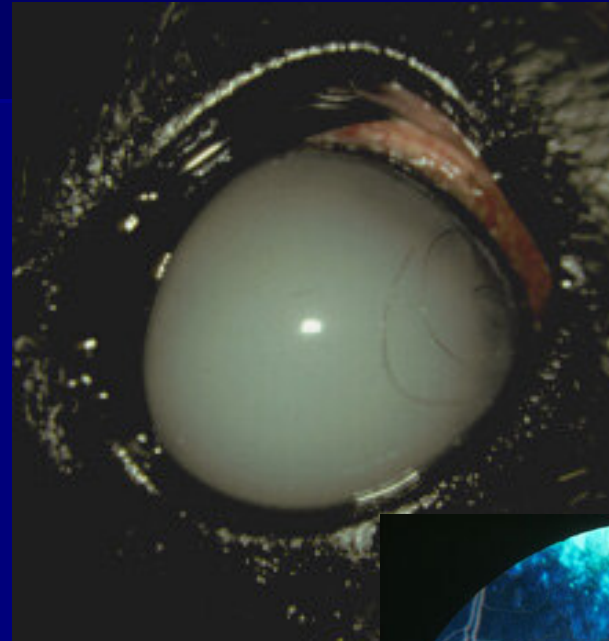
Diabetes mellitus

- Lens-induced uveitis
- Rapid cataract development stretches or ruptures capsule



Diabetes mellitus

- Hyperlipidemia
 - Lipid-laden aqueous
 - Lipemia retinalis
- Low risk of significant diabetic retinopathy



Hypothyroidism

- Corneal lipidosis
 - Supplementation halts progression
- Lipid-laden aqueous
- Lipemia retinalis

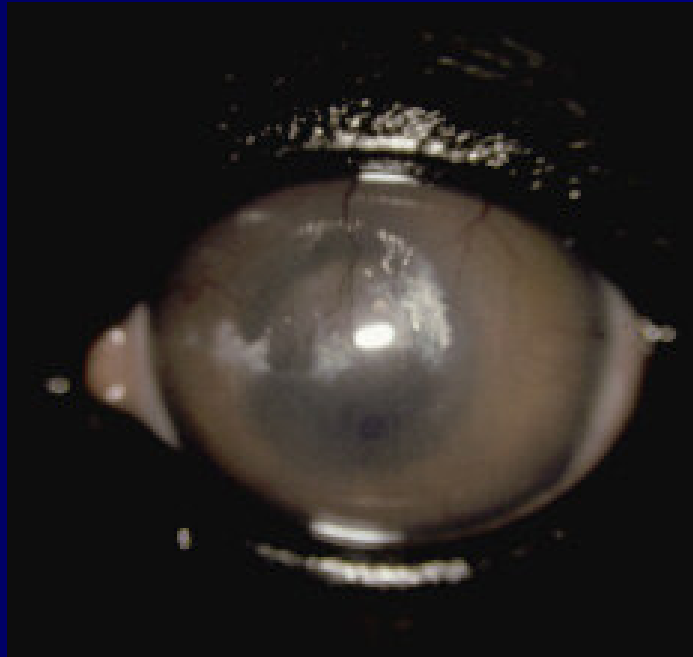


Hypoparathyroidism

- Hypocalcemia impacts cell membrane permeability within lens
- Non-progressive multifocal lens opacities



Hyperadrenocorticism



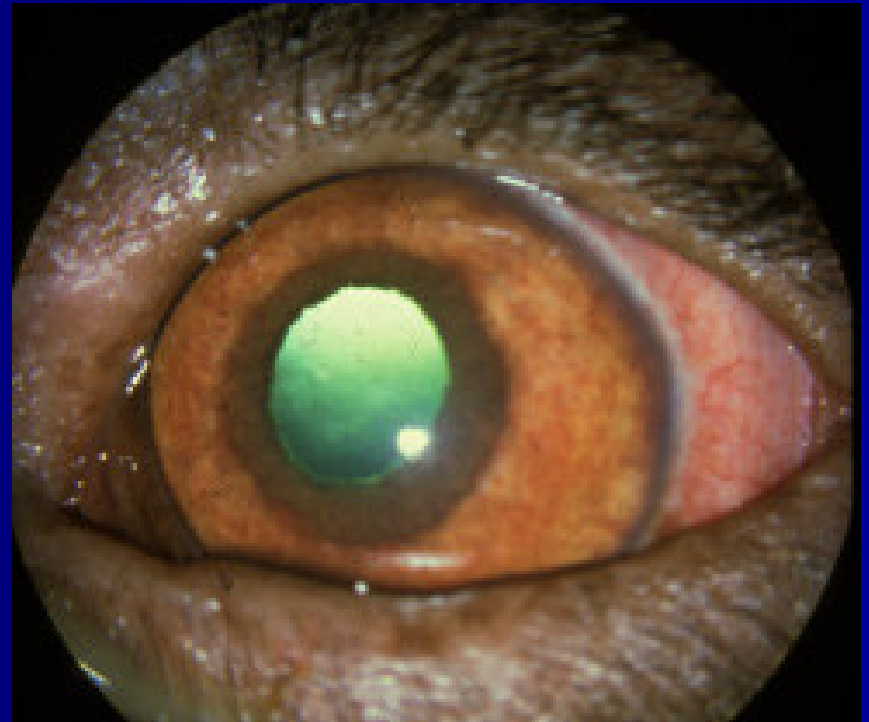
Hypertension

- Ocular signs more common/severe in cats than dogs
- Retinal hemorrhage and detachment
- BP > 150mmHg
- Tx with amlodipine besylate (Norvasc®)

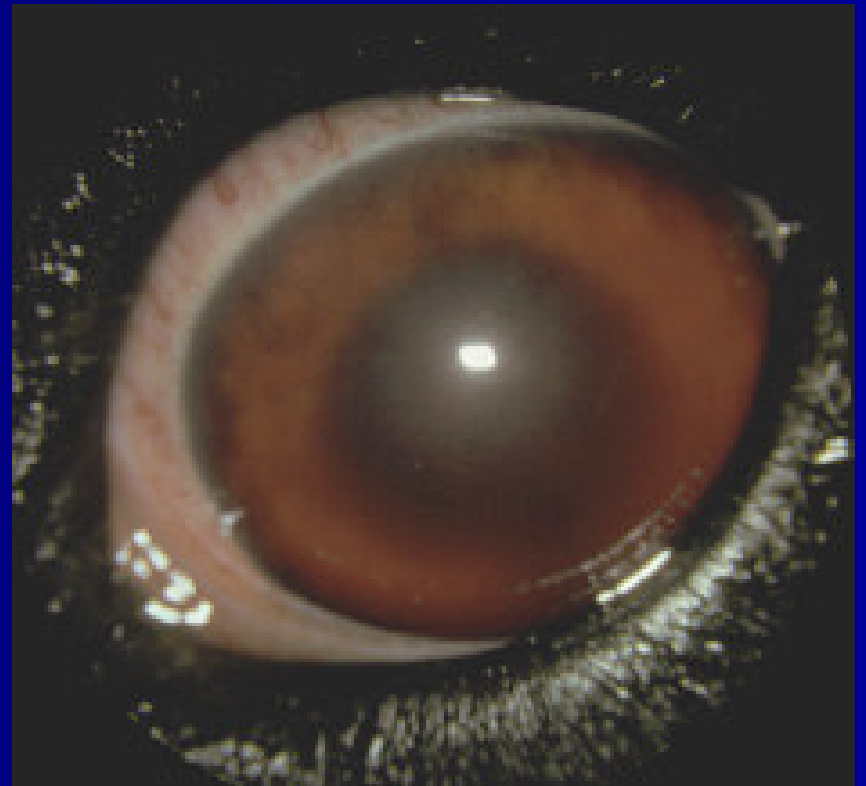


Lymphosarcoma

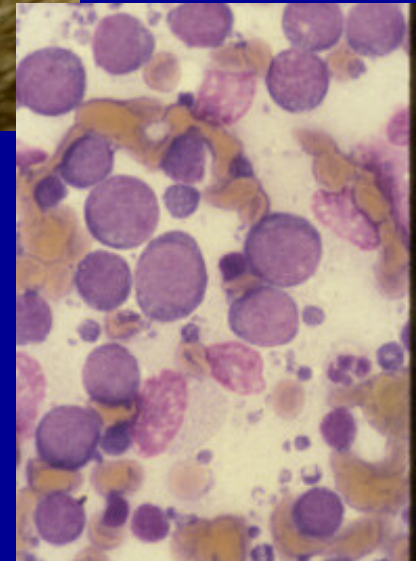
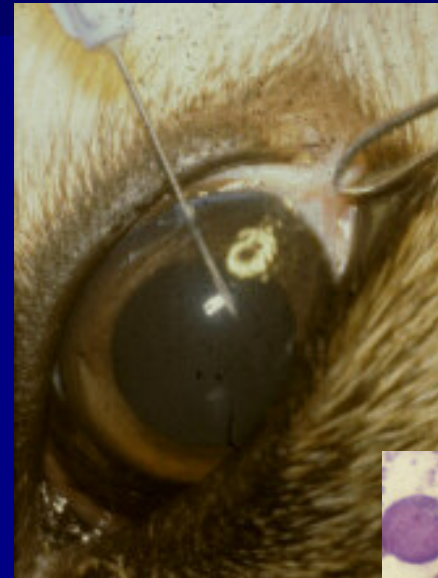
- Most common metastatic ocular tumor in dogs
- Hemorrhage, hypopyon, iris infiltration, orbital infiltration



Lymphosarcoma



Lymphosarcoma



Lymphosarcoma



Infectious Disease

- In a study of 102 dogs with uveitis, 18% were related to systemic infectious agents.

Massa et al: Causes of uveitis in dogs: 102 cases (1989-2000). Vet Ophthal 5:93-98, 2002.

Infectious Disease

- Bacterial
- Viral
- Protozoal
- Rickettsial
- Fungal
- Parasitic

Brucellosis

- Relapsing uveitis
- Hypopyon common



Brucellosis

- Response to therapy limited
- Potential zoonotic



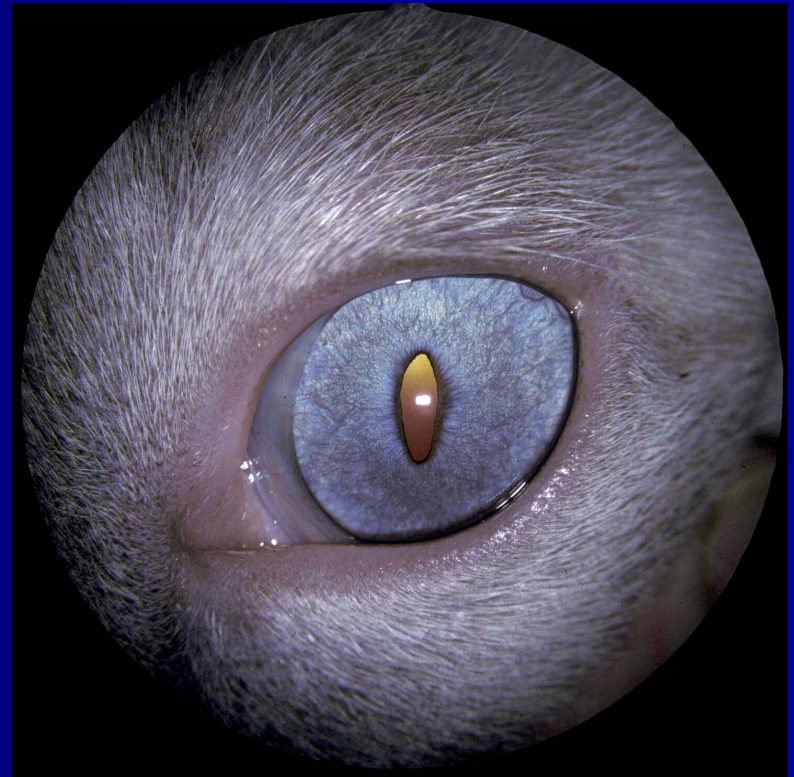
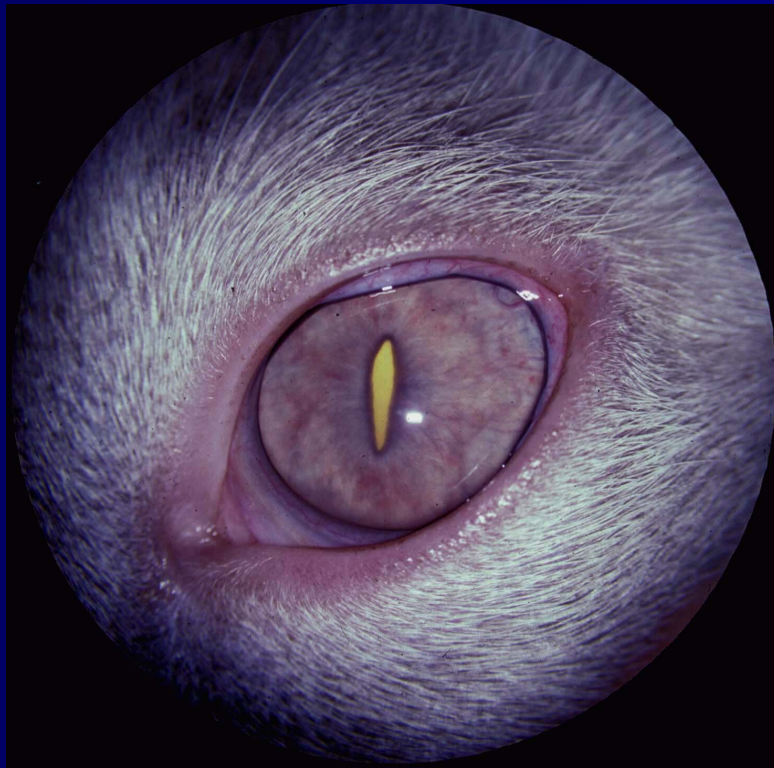
Bartonellosis

- Fastidious gram-negative bacteria
- *B.henselae* (cats), *B.vinsonii* (dogs)
- Intracellular colonization of erythrocytes and endothelial cells
- Diagnosis: Serology, PCR amplification

Bartonellosis

- First reported as cause of uveitis in cats by Lappin et al in 1999
- Also incriminated as pathogen in feline blepharitis, conjunctivitis, keratitis, and chorioretinitis

Bartonellosis



5 mo old Siamese, systemic tx only

Bartonellosis in Dogs

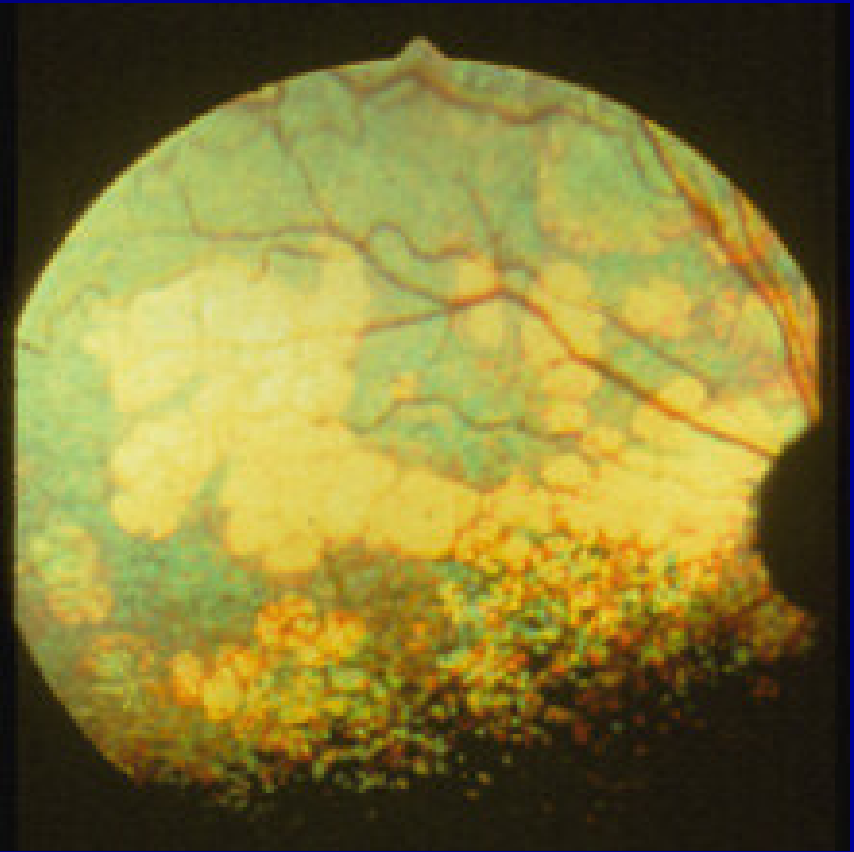
- Intermittent lameness
- Epistaxis
- Endocarditis
- Granulomatous lymphadenitis
- Cutaneous vasculitis
- **Anterior uveitis**
- Meningoencephalitis
- IMHA

Canine Distemper

- Conjunctivitis
- Dry eye
- Chorioretinitis
- Optic neuritis



Canine Distemper



Infectious Canine Hepatitis (Adenovirus)

- Ocular signs 1-3 weeks following illness or vaccine
- Anterior uveitis/ corneal edema
- Sight hounds susceptible to complications



Toxoplasmosis

- Exudative chorioretinitis and anterior uveitis
- Definitive diagnosis difficult



Leishmaniasis

- Classically *L.infantum* has origins in Mediterranean countries
- *L.chagasi* now found in the Americas
- Fox Hound uniquely susceptible in USA



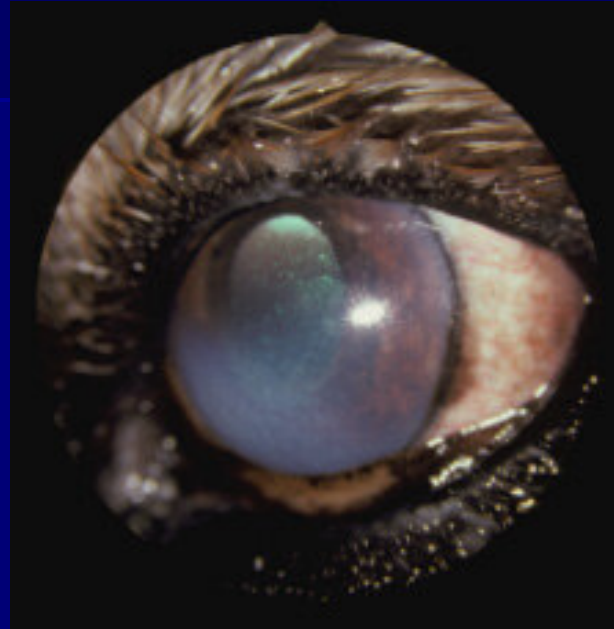
Leishmaniasis

- 24% of infected dogs have ocular disease
 - 52% blepharitis
 - 34% keratoconjunctivitis
 - 42% anterior uveitis

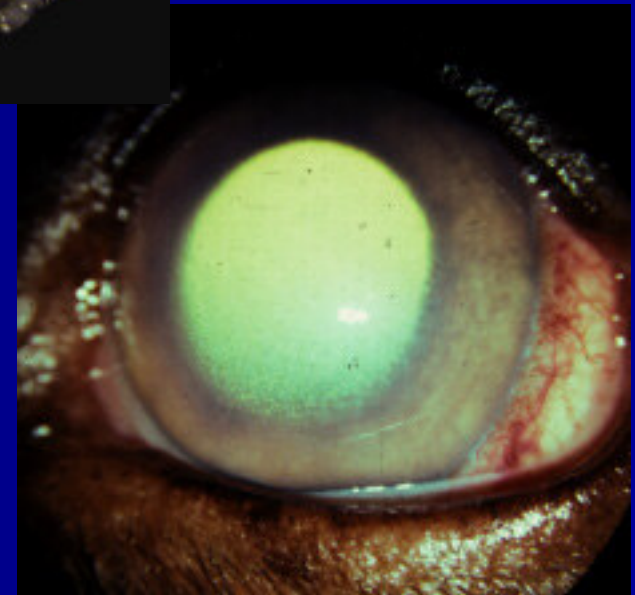
Pena et al: Ocular and periocular manifestations of leishmaniasis in dogs. *Vet Ophthalmol* 3:35-41, 2000.



Ehrlichiosis



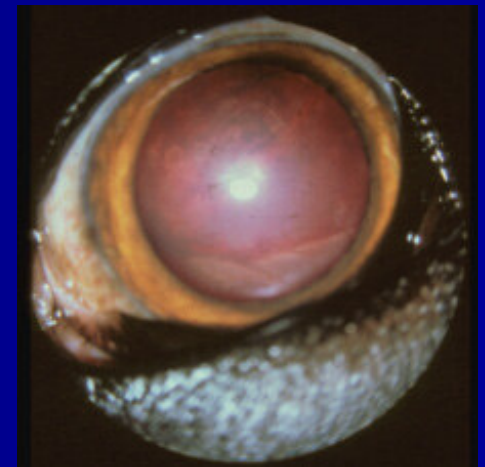
- Low grade chronic anterior uveitis



Ehrlichiosis



Ehrlichiosis



Ehrlichiosis



Courtesy Dr. Jean Stiles

Rocky Mountain Spotted Fever

- Clinical signs difficult to differentiate from ehrlichiosis



Blastomycosis

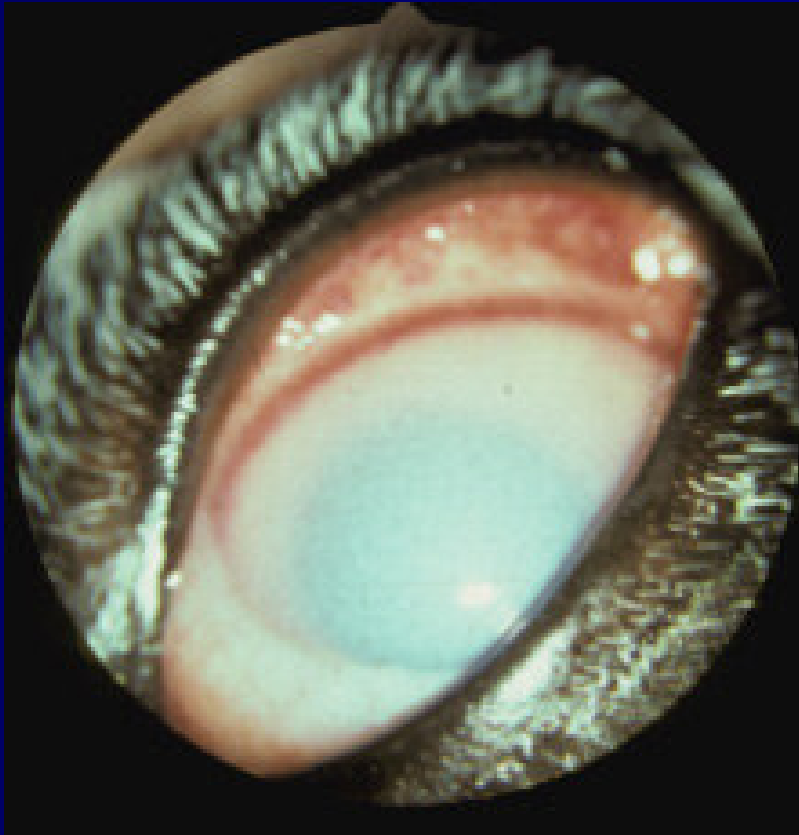
- Initial chorioretinitis, progressing to panophthalmitis



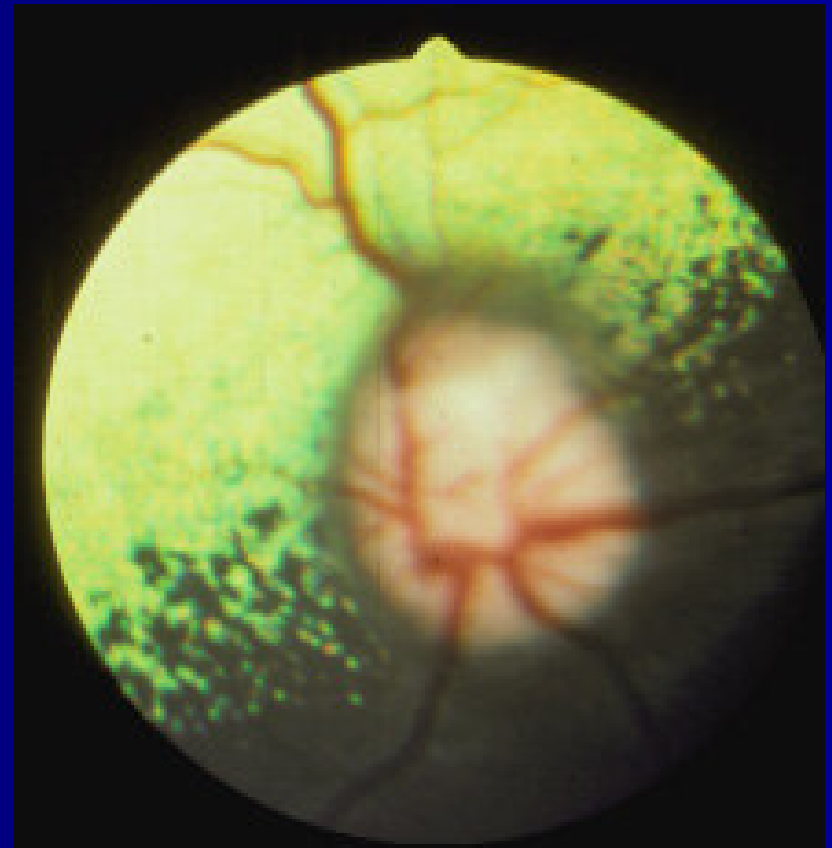
Blastomycosis



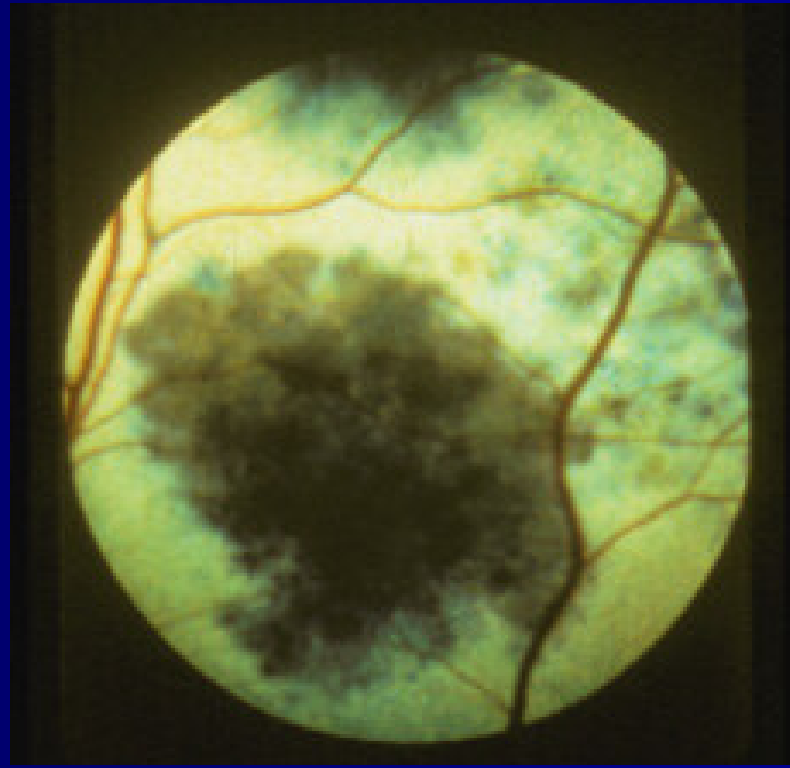
Blastomycosis



Cryptococcosis



Histoplasmosis

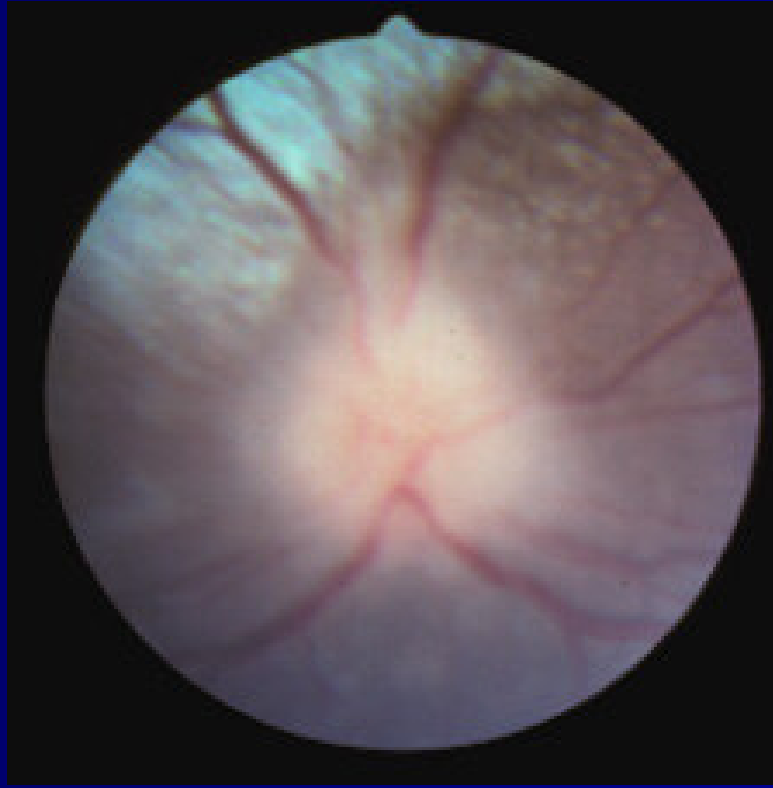


Courtesy of Dr. Art Quinn

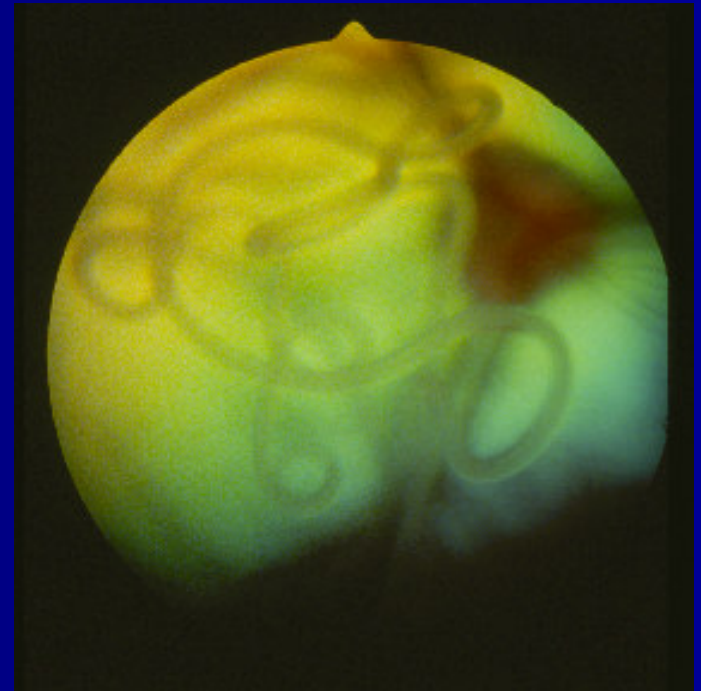
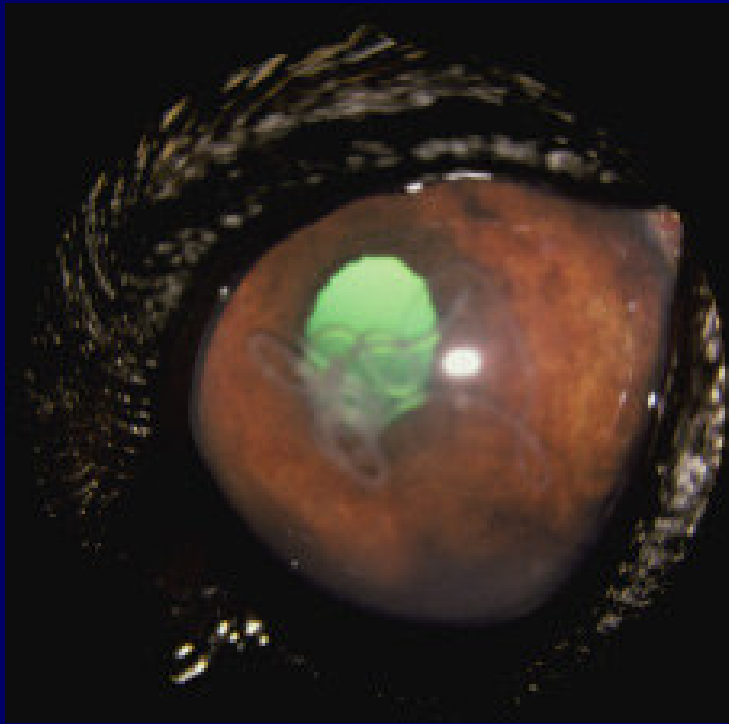
Aspergillosis



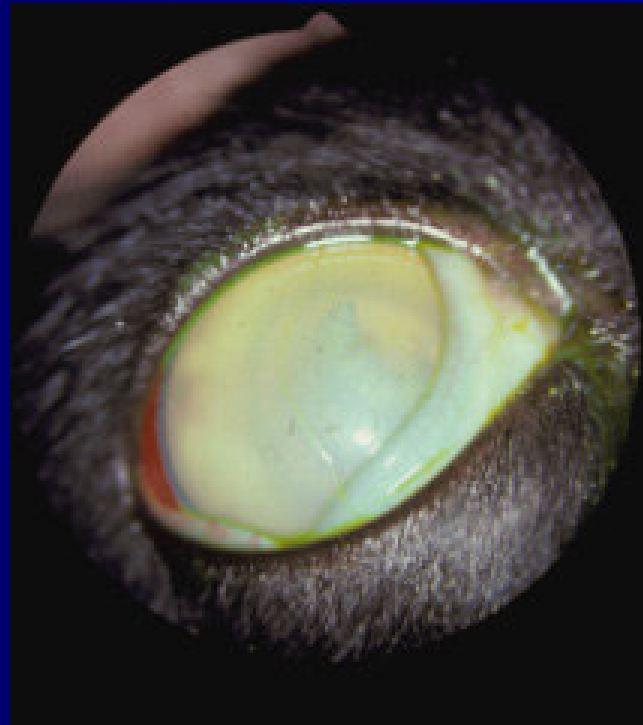
Granulomatous Meningoencephalitis (GME)



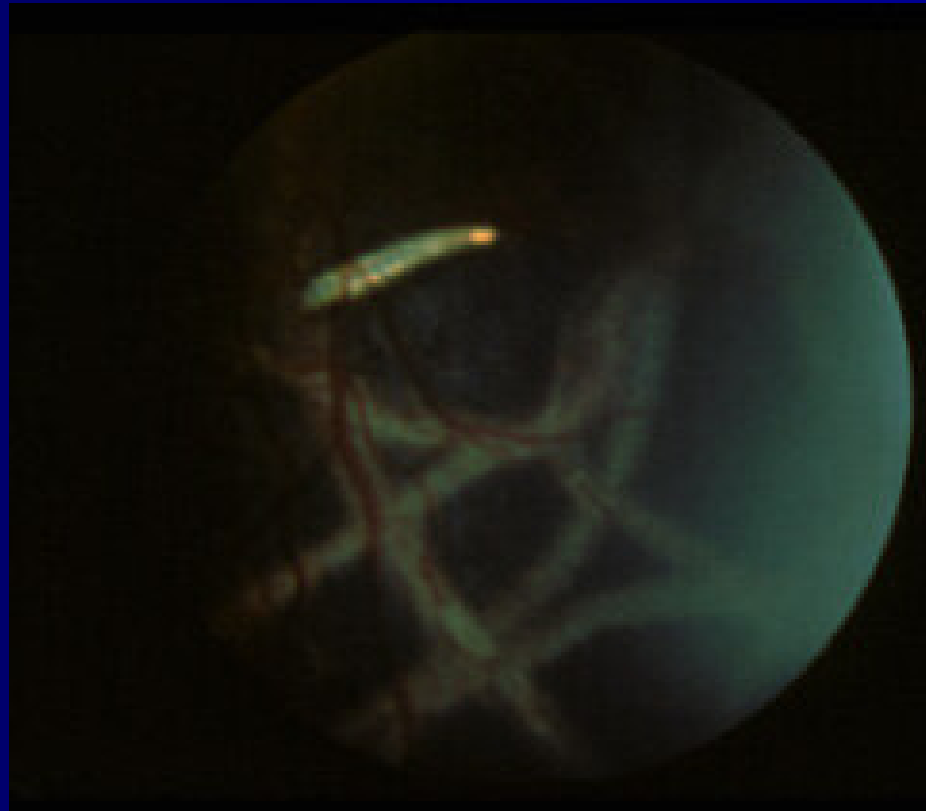
Dirofilariasis



Myiasis



Ophthalmomyiasis



Courtesy of Dr.Nancy Bromberg

Ivermectin Toxicity

- Profound overdose with large animal preparations
- Dilated pupils, retinal and disc edema
- Vision usually returns in 2-10 days

