Histological Basis of Ocular Disease
June 12<sup>nd</sup> – June 15<sup>th</sup> 2008

Patricia Mundy DVM
Richard R. Dubielzig.
This globe is from a 3 month old Shih Tzu dog. What are the two major abnormalities in this eye?
There is congenital micro-ophthalmia with the tissues of the globe largely within normal limits.

The bulk of the eye is made up of a thin walled cyst lined by primitive neural tissue.
This globe is from a 2 year old horse. The abnormality affected both eyes. Describe the abnormality.
Bilateral optic nerve head coloboma, grossly and histologically there is a deep cup in the optic nerve and the optic nerve is also expanded.
What is the most likely diagnosis that would explain all these clinical signs?
Ocular anomaly of merle coated dogs:

- Retinal dysplasia
- Congenital cataract
- Scleral coloboma
What abnormalities are seen in the gross and sub-gross images of this dog?

What abnormality is seen in the retinal image?

Diagnosis?
**Optic Disc Coloboma** with collapse of retina into coloboma

Complete *retinal separation* with attachment at the abnormal optic disc and ora ciliaris on one side.

The retina shows *choroidal hypoplasia*

Diagnosis is *Collie eye anomaly.*
What is structure A?

List four other abnormalities associated with this condition?
A is a **persistent hyperplastic primary vitreous**

Other associated abnormalities are:
- Persistent pupillary membrane
- Posterior polar cataract
- Lenticonus
- Microphthalmia
What four abnormal structures are seen in this section of cornea and conjunctiva?

What is your histopathological diagnosis?
The abnormal structures are:
- Keratinizing epithelium
- Hair follicles
- Sweat glands
- Dermal collagen

Corneal and conjunctival dermoid
These images are from a domestic shorthaired cat.
Describe the abnormality in photograph A?
What structure is ruptured in photograph B?
What name is given to this syndrome?
In picture A there is a protruding translucent oedematous cornea.

In B there is a rupture in Descemet's membrane, the scrolling of the edge of Descemet's membrane is consistent with a rupture.

Given the rupture in Descemet’s membrane a diagnosis of corneal hydrops can be made.
What is the most likely neoplasm in this image?

What corresponding abnormality is seen as a result of the neoplasm?
Anterior uveal melanocytoma

There is retinal detachment and peripheral corneal rupture with neoplasm rupture.
What surgical procedure has been carried out in this globe?
Ahmed valve
This is a sub gross photograph of a cat globe that had anterior lens luxation clinically and grossly.

What histological signs would confirm this?
• Bowing back on the iris leaflets

• Attenuation of corneal endothelium corresponding with posterior corneal contact with lens.

• Attenuation of ciliary body plicae
What features from these images are useful in differentiating pathological retinal detachment from artifactual retinal detachment?
A. Scrolling of retina is consistent with pathological retinal tear and detachment

B. Any subretinal space occupying lesion whether is be mass, fluid etc is consistent histologically with pathological retinal detachment. In this case there is a histiocytic and suppurative inflammatory infiltrate in the sub-retinal space secondary to blastomycosis

C. Hypertrophy of the retinal pigment epithelial cells is consistent with pathological retinal detachment
Image A is from a dog and image B is from a horse. Describe the abnormalities in these two images?

Most likely diagnosis?
Breaks in Descemet’s membrane producing curvilinear white tracts.

Haab’s striae in the cornea consistent with **chronic glaucoma**
This is an eye from a 7 year old mare, what is the most likely diagnosis?
Squamous cell carcinoma
This is an eye from a 10 year old DSH cat, what is the most likely diagnosis?
Feline Diffuse Iris Melanoma (FDIM)

Image A is of FDIM and shows the extension of redundant pigmented cells into the iris stroma. Image B shows the pigmented cells only on the anterior iris surface with minimal infiltrate into the iris stroma. Image B is consistent with iris melanosis.
This is an eye from a 5 year old male neutered DSH cat. There is marked lymphohistiocytic and suppurative panophthalmitis.

What is the most likely mycotic organism responsible for this Presentation?
**Histoplasma capsulatum**

Image A shows the marked lymphohistiocytic and suppurative inflammation that is seen with histoplasmosis. Image B highlights The 3 – 5 μ diameter Histoplasma organisms.
This eye is from an 11 year old Pug dog, the dog has a 3 week history of proptosis. What 4 main histological pathological features would you expect to confirm the proptosis?
Exposure keratitis

Retraction of eye lids as shown in the above images. Note the eye lid * in relation to the limbus (L)
Scleral and episcleral fibrosis

Marked optic nerve Atrophy
Exotic COPLow eyes!!

Hagfish

Anaconda

Potato!!

Giraffe

Platypus

Chambered Nautilus
(Above images showing the various manifestations of the Blastomycosis organism in a 3 year old Shepherd dog).

Interesting Cases.
This globe is from a 13 year old dog. The mass lesion visible was a pyogranulomatous inflammatory infiltrate.

There were various cavities within the Scleral lesion that contained Nematode Parasites (indicated by *)
This globe is from a 4 year old DSH cat that had a history of a cat fight. Grossly the cornea was normal but on sectioning there was an intact cat claw (*) embedded almost entirely in the anterior chamber with the pointed edge pointing out in cross section. We refer to this lesion resulting in the implantation of bacteria and fungi into the lens as septic implantation syndrome. This case is unusual in that we found the nail FB implanted and that the lens capsule was intact.
This is a globe from a 4 year old Shepard mix dog. The globe was enucleated after a biopsy of an iris mass was taken a year ago. Grossly and histologically, there is a break in Descemet’s membrane and corneal epithelium at the limbus (*). The neoplastic mass which was diagnosed as an irido-ciliary adenoma is seen extending through this break out of the eye.
This is a 14 year old DSH cat showing extensive Feline Diffuse Iris Melanoma Neoplastic cells are found in the scleral venous plexus and also extending through the optic nerve into the orbit.
This globe is from a 7 year old Labrador. A melanocytoma was diagnosed from an eviscerations sample. A year later a melanocytoma was arising in the scleral shell. The nuclear features of the re-growth were more suggestive of malignancy.
This globe is from a 2 year old GSD dog. Histologically and grossly the globe was within normal Limits despite the large mass lesion which was diagnosed as a Rhabdomyosarcoma.
This 4 year old GSD had a history of thoracic spinal pain and anterior uveitis.
Histologically there were numerous fungal hyphae in the ruptured lens capsule and in the vitreous. Despite a negative Aspergillus titre a diagnosis of systemic Aspergillosis was made which we feel explains the ocular and clinical signs.
This globe shows angle recession in a cat. More than likely anterior caudal blunt trauma displaces the cornea and lens posteriorly tearing the angle. The cornea recovers but the lens is still displaced.

The end of Descemet's is marked by The arrow.