Selected Diseases of the Cornea
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July 20th, 2009
Canine Collagenolytic Keratitis
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270 cases (1.5%)

- Usually associated with suppurative keratitis
- Collagenolytic enzymes from neutrophils, bacteria or native cells
- Rapid lysis of the entire stroma
- Breeds
  - Shih-tzu: 63 cases
  - Boston Terrier: 29 cases
  - Pug: 18 cases
  - Lab & Golden Combined: 14 cases
Canine Collagenolytic Keratitis
Canine Collagenolytic Keratitis
Peracute Lesion

Gram negative bacteria
Corneal Hydrops (Feline)

Associated with a break in Descemet’s membrane and extreme but transient edema
Equine Mycotic Keratitis
82 cases (10% of Equine Cases)

- Superficial vs. Deep presentation
- Suppurative inflammation
- Lesions poorly vascularized
- In deep keratitis, look first in Descemet’s membrane for fungi
Equine Mycotic Keratitis
Equine Mycotic Keratitis
Equine Mycotic Keratitis
Superficial Stromal Mycotic Keratitis
Mycotic Keratitis other than Equine

Canine Mycotic Keratitis
Feline Corneal Sequestrum
119 Cases = 1.9% of Feline Cases

- Associated with superficial ulcer
- The superficial stroma becomes acellular
- Desiccation might play a role in sequestrum formation
- Absorbs pigment of unknown chemical make-up
- 25% of cases are in Persian cats
Feline Corneal Sequestrum
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Conjunctival

Opportunistic Bacteria
Canine Indolent Ulcer
or Recurrent Erosion Syndrome (72 cases)

- 19% of case series in Boxer dogs
- Poor epithelial attachment with superficial stromal acellular zone
- Basement membrane is lost but laminin is overexpressed on the surface
- Very commonly seen in enucleated globes as a secondary phenomenon
  - Possibly bullous edema
Indolent Ulcer/Recurrent Erosion
Canine Indolent Ulcer
Laminin Immunohistochemistry
Indolent Ulcer
Sequestrum
Canine Indolent Ulcer
The Doubling Phenomenon of Descemet’s Membrane from Blunt Trauma or Surgical Trauma

“eye hit with a bottle rocket 2 years ago”
Electron microscopic findings
Descemetization

Cytokeratin
Mechanical Damage to Endothelium
Corneal Squamous Cell Carcinoma in Dogs with a history of Superficial Chronic Keratitis that were treated with Cyclosporin or Tacrolimus

• 117 cases of canine SCC in the COPLOW collection out of 6984 ocular tumors in dogs
• 29 cases of corneal SCC in the COPLOW Collection
  • 9 Pugs and 4 Bulldogs
  • Only 8 from non-brachycephalic breeds
• All have pre-existing chronic keratitis
• All have been treated with cyclosporin and/or tacrolimus

Corneal Squamous Cell Carcinomas diagnosed at COPLOW

[Graph showing the number of cases from 1997 to 2007, with a peak of 10 cases in 2007.]
Clinical Appearance of Corneal SCC
Risk Factors

• 21 of 21 had superficial chronic corneal inflammatory disease most often diagnosed as keratoconjunctivitis sicca

• Treatment information
  – Cyclosporin alone … 10 cases
  – Tacrolimus alone … 4 cases
  – Combination of both drugs … 6 cases
  – Other drugs or unknown … 5 cases
Morphology

Superficial central corneal malignant transformation
Morphology

Superficial keratectomy is adequate treatment in most cases
Morphology
Follow-up (n = 23)

- Follow-up interval 5 days to 31 months
- Only one dog had recurrent disease because of dirty deep margins
Conclusions

Canine Corneal Squamous Cell Carcinoma

- The number of submissions is increasing
- Previous superficial inflammation is a strong risk factor
- The Pug and Bulldog are over-represented
- Relationship to cyclosporin &/or tacrolimus
- The disease remains superficial and is treatable with keratectomy
Corneal Protozoal Keratoconjunctivitis in Dogs Treated with Cyclosporin or Tacrolimus
Corneal Protozoal Keratoconjunctivitis in Dogs Treated with Cyclosporin or Tacrolimus