Ocular Neoplasia: Feline
July 18th 2009
Richard R Dubielzig
Feline Melanocytic Ocular Tumors: 2766

- Melanoma: 1510
  - Diffuse Iris Melanoma (DIM)...1340
    (263 Early)
  - “Atypical” ...27
  - Limbal ...46
  - Conjunctival...27
  - +70 mostly DIM improperly labeled

Feline Diffuse Iris Melanoma
Feline Diffuse Iris Melanoma
Feline Diffuse Iris Melanoma
Feline Diffuse Iris Melanoma Extensive
Feline Diffuse Iris Melanoma Extensive
Feline Diffuse Iris Melanoma
Metastatic Potential of Feline Diffuse Iris Melanoma
Feline Diffuse Iris Melanoma Recurrent in Scleral Shell
Feline Diffuse Iris Melanoma
Time of survival after enucleation

Kalishman JV, Chappell R, Flood LA, Dubielzig RR
with enucleation due to diffuse iris melanoma. Vet.
Ophthal. 1: 25-29.
Early Stages of Feline Diffuse Iris Melanoma (FDIM)

• Melanosis
• Early Melanoma
Melanosis
Feline Iridal Melanosis
Early FDIM

Tumor confined to the iris
Ages of Cats with Melanosis, Early Melanoma, Melanoma, and Extensive Melanoma

Progression of Feline DIM

Melanosis n = 84
Ages of Cats with Melanosis, Early Melanoma, Melanoma, and Extensive Melanoma

Progression of Feline DIM

Early Melanoma n = 325
Ages of Cats with Melanosis, Early Melanoma, Melanoma, and Extensive Melanoma

Progression of Feline DIM

Melanoma (not extensive)  n = 1242
Ages of Cats with Melanosis, Early Melanoma, Melanoma, and Extensive Melanoma

Progression of Feline DIM

- Melanosis
- Early DIM
- DIM (not extensive)
- Extensive DIM

Extensive Melanoma n = 272
Feline Atypical Melanoma

Feline Atypical Melanoma

- 24 cases in the COPLOW collection
- Mostly Domestic Shorthaired
Feline Atypical Melanoma
Feline Atypical Melanoma
Feline Conjunctival Melanoma

18 cases: 0.6%

More likely to cause systemic disease than the tumor in dogs

Feline Conjunctival Melanoma

Bleached
Feline Iridociliary Epithelial Tumors

- 102/2766 neoplastic cases
- Tend to be non-pigmented
- Solid
- Cavitated
- About half have metaplastic bone
- Vimentin+, Cytokeratin-
Feline Iridociliary Epithelial Tumors
Feline Iridociliary Epithelial Tumors
Feline Iridociliary Epithelial Tumors
Feline Iridociliary Epithelial Tumors
Feline Post-traumatic Sarcoma (PTS) 234/2766

- Spindle cell variant
  - 149 cases
  - Lens epithelial origin
- Round cell variant
  - 54 cases
  - Variant of lymphoma
- Osteosarcoma/Chondrosarcoma
  - 26 OSA/5 Chondrosarcoma cases
  - Unknown cell of origin

Reasons to believe PTS is related to trauma

- Lens capsule rupture
- History of trauma or abnormal eye
- Time between trauma and tumor
  - Between 2 months and 15 years (average 7 years)
Post-traumatic sarcoma cases are relatively old at the time of onset.
Early Spindle Cell Variant PTS
Tumor Distribution in Spindle Cell Variant

Spindle Cell PTS with Metaplastic Bone
Spindle Cell Variant

PTS in the Tapetum
Spindle Cell Variant Optic Nerve Invasion
Follow-up Spindle Cell Variant

• Cases which have extended beyond the sclera have a bad prognosis
  – Local recurrence
  – Extension towards the brain
• Cases removed within the sclera have a good prognosis
• 8% of traumatized globes removed prophylactically have early PTS

Round Cell Variant PTS

Round Cell Variant PTS

Retina
Feline PTS Osteosarcoma
Spindle Cell Tumors of the Feline Eyelid
Peripheral Nerve Sheath Tumors

23/2078 Cases (1%)
Spindle Cell Tumor of the Feline Eyelid
Spindle Cell Tumor of the Feline Eyelid
Feline Restrictive Orbital Myofibroblastic Sarcoma

(Feline Sclerosing Orbital Pseudotumor)

- 16 cases in the archive
- Characterized by restricted movement of the globe and lids
  - The primary symptoms are corneal inflammation secondary to restricted lid movement
- Mass lesions are not a part of the early disease
- Spread from one eye to the other or to the oral cavity
- Mass lesions and bone lysis seen late in the disease
## Feline Restrictive Orbital Myofibroblastic Sarcoma

### Eventual Clinical Outcome of the 10 Cases with Adequate Follow-up Information

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean Duration</th>
<th>Range of Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases with involvement of the contralateral eye</td>
<td>6 of 10 with adequate follow-up (60%)</td>
<td>4.33 months</td>
<td>0 - 6 months</td>
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<tr>
<td>Cases with involvement of the oral cavity</td>
<td>4 of 8 with adequate follow-up (50%)</td>
<td>5.5 months</td>
<td>0 - 14 months</td>
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<tr>
<td>Cases with involvement of either of the above</td>
<td>9 of 10 with adequate follow-up (90%)</td>
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# Clinical Outcome

<table>
<thead>
<tr>
<th>Clinical Outcome</th>
<th>Number</th>
<th>Mean Duration</th>
<th>Range of Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deceased due to orbital disease</td>
<td>4</td>
<td>9.75 months</td>
<td>5 - 15 months</td>
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<tr>
<td>Deceased for unrelated cause</td>
<td>0</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Living with progressive disease</td>
<td>3</td>
<td>6.67 months</td>
<td>5 - 9 months</td>
</tr>
<tr>
<td>Living without disease</td>
<td>1</td>
<td>3 months</td>
<td>3 months</td>
</tr>
<tr>
<td>Lost to follow-up</td>
<td>6</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
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</table>

Feline Restrictive Orbital Myofibroblastic Sarcoma
Imaging

4 cases with CT available for review

Feline Restrictive Orbital Myofibroblastic Sarcoma
Gross Morphologic Characteristics

- Adherent orbital tissues
- Profound corneal disease
- Thickened and distorted lid tissues
Oral Cavity Involvement

Dr Clinton Evans
Histopathologic Characteristics

• Spindle cell proliferation
  – In the connective tissue of the orbit
    • Surrounding muscles
    • Surrounding adipose
    • Destruction of bone
  – Subepithelial
    • Dermal
    • Oral
    • Conjunctival

• Collagenous matrix

• Inflammation minimal (perivascular lymphoplasmacytic)
Histopathologic Characteristics

Second orbit and oral mucosa from necropsy specimen
Histopathologic Characteristics

S100

Trichrome

SMA
Histopathologic Characteristics
Sub-epithelial

Oral Mucosa

Skin
Feline Restrictive Orbital Myofibroblastic Sarcoma

Zygomatic Arch
Feline Restrictive Orbital
Myofibroblastic Sarcoma
Late Disease, Mass lesions Appear
# Feline Ocular Metastatic Tumors

<table>
<thead>
<tr>
<th>Carcinoma</th>
<th>Anterior</th>
<th>Posterior</th>
<th>Both</th>
<th>Total</th>
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<tbody>
<tr>
<td>Non-lining, non-angioinvasive</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>7</td>
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<tr>
<td>Lining</td>
<td>9</td>
<td>0</td>
<td>4</td>
<td>13</td>
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<tr>
<td>Angioinvasive</td>
<td>1</td>
<td>9</td>
<td>6</td>
<td>16</td>
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<tr>
<td>Lining and angioinvasive</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td>15</td>
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<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>41</td>
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<table>
<thead>
<tr>
<th>Sarcoma</th>
<th></th>
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<th></th>
<th>17</th>
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<tbody>
<tr>
<td>Lymphoma</td>
<td>81</td>
<td>8</td>
<td>83</td>
<td>172</td>
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<tr>
<td>Lymphoma/Uveitis</td>
<td>28</td>
<td>0</td>
<td>4</td>
<td>32</td>
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</tbody>
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Feline Metastatic Epithelial Tumor: Lining Pattern
Feline Metastatic Epithelial Tumors: Angioinvasive Pattern

Feline Metastatic Epithelial Tumors: Angioinvasive Pattern
Feline Metastatic Epithelial Tumors: Angioinvasive Pattern
Feline Metastatic Epithelial Tumors: Primary Lung Tumor