Tumors of the Canine Globe

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Anatomic Distribution of Canine Primary Ocular Neoplasia  
\( (n = 6110) \)

- **Eyelid**: 1408 cases, 23%
- **Conjunctiva**: 1192 cases, 19%
- **Orbit**: 288 cases, 6%
- **Globe**: 3225 cases, 53%
Canine Primary Tumors of the Globe
(n = 3225)

Tumors of the globe = 3225 of 6110 neoplasms, or 53%
2135/5722 Canine Melanocytic Tumors

- Outside the Globe: 264
  - Conjunctival: 159
  - Eye Lid: 72
  - Skin: 33
- Affecting the Globe: 1871
  - Anterior Uveal Melanocytoma: 1245
  - Anterior Uveal Malignant Melanoma: 312
  - Limbal Melanocytoma: 213
  - Choroidal: 86 Melanocytoma and 11 malignant Melanoma
  - Metastatic Melanoma: 15

Anterior Uveal Melanocytoma
1245 Cases

Many cases arise within ocular melanosis or heavily pigmented globes

Melanocytoma is distinguished from melanosis by the presence of a distinct mass lesion or by a double population of spindle and round cells
Melanocytoma
Melanocytoma
Heavily pigmented Round cells and Heavily pigmented Spindle cells
Limbal (Epibulbar) Melanocytoma
213 Cases
German Shepherds are over-represented
Canine Limbal Melanocytoma
Typical Limbal Melanocytoma

Atypical
Round cells dominate

Electron Micrograph
Melanocytes
Anterior Uveal Malignant Melanoma
312 Cases

Many Cases arise from Melanocytoma or Melanosis
Malignant Uveal Melanoma
Malignant Uveal Melanoma
Malignant Uveal Melanoma
Choroidal Melanocytic Tumors
86 Benign & 11 Malignant
Choroidal Melanocytic Tumors
After 4 years the dog developed neurologic disease, presumed to be secondary to invasion of the optic foramen.
Canine Iridociliary Epithelial Tumors

717 Cases

116 are Adenocarcinoma

16 Cases of Malignant Adenocarcinoma with features of Pleomorphic Adenocarcinoma

Canine Iridociliary Epithelial Tumors
Pigmented Iridociliary Adenoma
Iridociliary Adenoma
Iridociliary Adenoma

Basement Membranes

PAS
Asteroid Hyalosis

Iridociliary Adenoma
Immunohistochemistry of Canine Iridociliary Epithelial Tumors

- Vimentin+
- Cytokeratin- (Malignant tumors tend to become +)
- S100+
Non-uveoinvasive (n = 7)

Vimentin
100% positive

Pancytokeratin
100% positive

Adeno-CA (n = 7)

Vimentin
100% positive

Pancytokeratin
57% positive
Malignant Variant of Iridociliary Epithelial Tumor (Pleomorphic Adenocarcinoma)  
16 Cases

Pleomorphic Adenocarcinoma
Pleomorphic Adenocarcinoma

Vimentin

100% positive  (n = 16)

Pancytokeratin

75% positive  (n = 16)
Pleomorphic Adenocarcinoma

- Four (25%) dogs had received an intraocular gentamicin injection 2-10 mo (ave 4.25 mo) prior to diagnosis
- 7 (44%) dogs had a history of chronic eye disease of at least one year
# Pleomorphic Adenocarcinoma—survival and outcome of 16 cases

<table>
<thead>
<tr>
<th>Outcome</th>
<th># cases</th>
<th>Site of confirmed or suspected metastasis (#cases)</th>
<th>Survival (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documented metastasis</td>
<td>2</td>
<td>Lung (2), kidney (1)</td>
<td>9, 30</td>
</tr>
<tr>
<td>Suspected metastatic disease</td>
<td>4</td>
<td>Lung (2), liver (1), abdominal mass (1)</td>
<td>4, 4, 7, 10</td>
</tr>
<tr>
<td>Dead for unknown reason</td>
<td>6</td>
<td>N/A</td>
<td>2, 3, 10, 22, 24, 39</td>
</tr>
<tr>
<td>Alive</td>
<td>2</td>
<td>N/A</td>
<td>2, 41</td>
</tr>
<tr>
<td>Lost to follow-up</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Survival times in red are dogs that received gentamicin*
Malignant Variant of Iridociliary Epithelial Tumor (Pleomorphic Adenocarcinoma)

Cytokeratin

Vimentin

Lung Metastasis
Spindle Cell Tumors of Blue-Eyed Dogs
70 cases

Spindle Cell Tumor of Blue-Eyed Dogs

- Median age = 8.3 years
- Gender equal
- Laterality equal
- Siberian Husky, Australian Shepherd, Border Collie and other breeds with blue or partly-blue eye
Spindle Cell Tumor of Blue-Eyed Dogs
Spindle Cell Tumor of Blue-Eyed Dogs

GFAP

Stains Schwann cells of non-myelinating nerve fibers
Spindle Cell Tumor of Blue-Eyed Dogs

Basal Lamina

Collagen
Distribution of GFAP+ Cells in the Uvea of Blue-Eyed Dogs
Distribution of GFAP+ Cells in the Uvea of Pigmented Dog Eyes
Corneal Squamous Cell Carcinoma

• 54 cases in the COPLOW Database
  • 20 Pug
  • 4 Bulldog
  • 3 Shih Tzu
  • 3 English Bulldog
  • 3 Cavalier King Charles Spaniel
  • 3 Pekingese

Corneal Squamous Cell Carcinoma

• All cases have superficial chronic keratitis
• All cases had prior treatment with either tacrolimus or cyclosporine
• Most cases develop axially
• Most cases superficial with little deep invasion
• Most cases treatable with superficial keratectomy
Corneal Squamous Cell Carcinoma

Multiple recurrences extending deep into the corneal stroma and requiring enucleation in this case.
Canine Primitive Neuroectodermal Tumors (PNET)  
Medulloepithelioma, Retinoblastoma and Retinocytoma
Medulloepithelioma
Retinoblastoma

Canine

Human

Homer-Wright Rosettes

Flexner-Wintersteiner Rosettes
Optic Nerve or Retinal Glioma

Optic Nerve or Retinal Glioma