Canine Ocular Tumors Following Gentamicin Injection

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Gentamicin

- Treatment for primary glaucoma in blind eyes
- Intravitreal injections are toxic to ciliary body epithelium – rapidly stops aqueous humor production
A review of Iridociliary Epithelial Tumors

• 702 cases reviewed
Pleomorphic Iridociliary Adenocarcinoma
What About Dogs?

• Human pleomorphic adenocarcinomas are associated with trauma
• Are intravitreal injections of gentamicin a tumor-inciting trauma?
  – Physical trauma to the eye
  – Chemical insult
  – Inflammation
Results

- Iridociliary Epithelial Tumors: 6
- Melanocytic Tumors: 6
- Spindle Cell Tumor of Blue Eyed Dogs: 1
- Astrocytoma: 1
# Iridociliary Tumors

<table>
<thead>
<tr>
<th>Breed</th>
<th>Adenocarcinoma</th>
<th>Adenoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Labrador Retrievers, 1 Golden Retriever</td>
<td>Cocker Spaniel mix</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>5 (4 pleomorphic)</td>
<td>1 (pleomorphic foci)</td>
</tr>
<tr>
<td>Sex</td>
<td>2 FS, 3 MN</td>
<td>MN</td>
</tr>
<tr>
<td>Age at Enucleation</td>
<td>11.9yo (8-15)</td>
<td>9yo</td>
</tr>
<tr>
<td>Gentamicin ➔ Tumor time</td>
<td>Avg = 6.15 months (7 weeks-15 months)</td>
<td>4 years</td>
</tr>
</tbody>
</table>
Iridociliary Tumors: Follow Up

• 5/6 animals died or were euthanized within 12 months of enucleation
  – Average time from diagnosis → death = 6 months

• 1 animal had confirmed metastases, 3 others had suspected metastases
  – Radiographic findings of lung, liver nodules
Pleomorphic Cases
# Menalocytic Tumors

<table>
<thead>
<tr>
<th>Breed</th>
<th>Melanoma</th>
<th>Melanocytoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shih-tzu, Cocker Spaniel,</td>
<td>Norwegian Elkhound, Basset Hound, Labrador</td>
<td></td>
</tr>
<tr>
<td>Shepherd Mix</td>
<td>Retriever</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Sex</td>
<td>1 MN, 1 FS, 1 F</td>
<td>1 MN, 1 FS, 1 unspecified</td>
</tr>
<tr>
<td>Age at Enucleation</td>
<td>Avg = 10.7yo (10-12)</td>
<td>Average = 7yo (4-9)</td>
</tr>
<tr>
<td>Gentamicin to Tumor Time</td>
<td>Avg = 7.7 months (3-10 months)</td>
<td>Average = 3.25 months (3 weeks-6 months)</td>
</tr>
</tbody>
</table>
Melanoma

- All cases lost to follow up
Spindle Cell Tumor of Blue-Eyed Dogs

• 7.5yo FS Husky mix
• G → T 14 months
• Alive and well
Astrocytoma/Glioma

- 11 year 9 month old FS Siberian Husky
- G → T 15 months
- Alive and well 12/10
Considerations

• Incomplete records/histories
  – No indication of tumors at time of CBA
  – Other ICA cases may have a history of CBA

• Case Selection
  – Primary versus Secondary Glaucoma
Standard of Practice

• Multi-DVM Ophthalmology Specialty Clinic
• 75,000 patients 2005 - 2010
• 90 CBA’s 2005 - 2010
• All Dogs
• All tumor free at CBA
• No clinic policy
• A Survey of common practice
Conclusions

• Is intravitreal gentamicin injection a tumor-inducing trauma?
  – Yes!
    • Normal eyes presenting with tumors weeks – months after CBA
  – Maybe…
    • Eyes not tumor free at time of CBA?
  – No
    • Coincidental
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