Salivary Neoplasia in Dog and Cats: 1996-2017

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Introduction

Salivary gland tumors are uncommon in dogs and cats, with a reported overall incidence of 0.17% within salivary disease.1 In addition, salivary gland tumors compose less than 0.2% of tumors in dogs and cats.2 As this is a rare condition there is minimal information regarding salivary gland neoplasia in the veterinary literature and much of the descriptive data are decades old. Simple adenocarcinoma is reportedly the most common histopathological type of the salivary gland neoplasia in dogs and cats (figure 1 & 2).4

To the authors’ knowledge, breed disposition and location of salivary neoplasia has been sparsely described. In one earlier report spential breeds were indicated to have a possible predisposition.4 However, this finding has not been consistent in other reports.3 In one study Siamese cats appeared to be overrepresented, with 30% (9/30) of the affected cats with salivary neoplasia being Siamese or Siamese-cross.2 The parotid and mandibular salivary glands are reported to be most often affected and account for 75 to 80% of all salivary gland neoplasia. The zygomatic, sublingual, and minor salivary glands account of the remainder of the tumors.1,3

Materials and Methods

Case Selection

Eligible cases were retrieved from a computer search of the VMDB for dogs and cats presented from January 1, 1996 through December 31, 2017 that had the a specific diagnostic code relating to salivary neoplasia. For comparison a reference population was created through a separate search through the VMDB website. Eligible animals for the control group included dogs and cats presented from January 1, 1996 through December 31, 2017 that had the diagnostic code “dental abscess.” Each individual case of salivary neoplasia was then matched to two control subjects based on institution, species, discharge date +/- two years, and an age constraint - either the same age or older.

Statistical Analysis

Differences in demographics between the salivary neoplasia and control group were assessed with a Chi Square test. Conditional logistic regression was performed to assess for association of breed and sex with salivary carcinoma. A p-value of 0.05 was considered significant for these analyses. The analysis was performed using SAS version 9.4a and Stata.b

Results

A total of 227 dogs and cats were selected through the VMDB search based on their diagnostic code from six different veterinary universities. A total of 56 dogs and 20 cats were included in our statistical analysis with a total of 112 dogs and 40 cats selected as controls. The overall incidence of salivary neoplasia was calculated to be 15.3 per 100,000 dogs and 26.3 per 100,000 cats. Table 1 summarizes the findings for location of salivary neoplasia. Indeterminate (major gland) was the most frequently reported neoplasia (59%). There was no breed disposition within the feline species for salivary neoplasia. In the conditional logistic regression analysis poodles (toy and standard) had an increased odds of salivary cancer compared to mixed breed dogs (OR 6.83, 95% CI: 1.2-40.1; p<0.075). No other dog breeds were found to be at increased risk.

Discussion

The goal of this study was to update descriptive statistics of salivary neoplasia using a much larger number of cases than has been previously reported. Results from the present study differ from previous conclusions made in regards to predisposed breeds, with poodles having an increased odds of salivary neoplasia in comparison to mixed breeds. The overall incidence of salivary neoplasia in dogs and cats is also less frequent than previously reported although direct comparison is difficult due to population selection. Additional epidemiological studies should be performed in veterinary medicine to help determine risk factors for salivary gland neoplasia.

References


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Table 1. Distribution of salivary tumor location in dogs and cats.

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of Cases</th>
<th>Percentage of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandibular</td>
<td>3</td>
<td>4%</td>
</tr>
<tr>
<td>Parotid</td>
<td>4</td>
<td>5%</td>
</tr>
<tr>
<td>Sublingual</td>
<td>10</td>
<td>13%</td>
</tr>
<tr>
<td>Salivary gland duct</td>
<td>13</td>
<td>17%</td>
</tr>
<tr>
<td>Indeterminate (major gland)</td>
<td>45</td>
<td>59%</td>
</tr>
<tr>
<td>Indeterminate (minor gland)</td>
<td>1</td>
<td>1%</td>
</tr>
</tbody>
</table>

Figure 1. Transverse post-contrast CT image (A) and dorsal reconstructed CT image (B) demonstrating a salivary carcinoma within the left mandibular region (red arrow) of a canine.

Figure 2. A) Surgical removal of a salivary gland carcinoma in a cat. B) Salivary gland carcinoma ex vivo.