UNUSUAL FINDINGS OF CUTANEOUS LYMPHOMAS IN DOGS

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Five cases of cutaneous lymphomas were observed at Bombay Veterinary College, Mumbai and included in this report. Grossly, the growths had a large variation in size but frequently appeared alopecic, round and pink in colour. Histopathology revealed sheets of round cells showing large, pleomorphic nuclei, having a typical plasmacytoid appearance and infiltrating the dermal appendages and vessels. These cells showed CD 3 and CD 30 positivity on Immunohistochemistry and were typed as T cell lymphomas.

Keywords: Cutaneous lymphoma, Canine cancer, Immunohistochemistry

Cutaneous lymphoma in canine has not been much documented. Its etiology is by far unknown (Risbon et al., 2006; Fontaine et al., 2010). These groups of neoplasia are also known as mycosis fungoides or Sezary syndrome in humans. Cutaneous lymphoma lesions in canines closely resemble the equivalent human diseases. Canine cutaneous lymphomas are usually of T cell origin as compared to human cutaneous lymphomas that have B cell predominance (Moore et al., 1994). Cutaneous lymphomas are spontaneous neoplasms of the skin and mucous membranes and the few cases reported have been in older dogs (Moore et al., 1994; Moulton, 1978). There is no known breed predilection. The tumor is known to originate as erythematous patches and plaques and later transforms to nodules.

A case study of five cutaneous lymphomas was received at Bombay Veterinary College in a span of 6 months. Two out of the five cases were from the extremities, two on the earflaps and one on the dorsal aspect of the nose (Table 1).

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Breed</th>
<th>Age (Years &amp; months)</th>
<th>Sex</th>
<th>Location of Tumor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Non Descript</td>
<td>9Years</td>
<td>Female</td>
<td>Forelimb</td>
</tr>
<tr>
<td>2</td>
<td>Non Descript</td>
<td>10 Years</td>
<td>Male</td>
<td>Face</td>
</tr>
<tr>
<td>3</td>
<td>Golden retriever</td>
<td>11 Years and 5months</td>
<td>Male</td>
<td>Hindlimb</td>
</tr>
<tr>
<td>4</td>
<td>Cocker spaniel</td>
<td>7 months</td>
<td>Male</td>
<td>Pinna</td>
</tr>
<tr>
<td>5</td>
<td>Labrador cross</td>
<td>6 Years</td>
<td>Male</td>
<td>Pinna</td>
</tr>
</tbody>
</table>

Grossly, four of the cases were presented as alopecic, smooth, round masses and one case was of an uneven skin plaque. The sizes ranged from large palm sized growth to small pea sized growth. The average size of the tumors was 3cm X 2.6 cm X 1.5 cm. They were white to pink in color, soft in consistency and round in shape Fig.1. Cut section appeared uniform and white. No discharge or exudate was present in the small, uninfected masses. The larger masses were invariably with ulcers and superimposed with secondary bacterial infection forming pus. Impression smears for cytology were made and fixed with methanol. The tumor masses were fixed in 10% normal saline and routine processing including H&E staining was carried out. On two samples, Immunohistochemistry was carried out to further subtype the cutaneous lymphomas. Immunohistochemical analysis was performed on 4-micron thick paraffin sections, deparaffinized in fresh xylene followed by rehydration through a graded series of alcohol. Antigen retrieval was performed in citrate buffer (pH 6.0) for 10 min followed by subsequent cooling for 20 min and blocking endogenous peroxidase with methanol-hydrogen peroxide. Slides were next incubated with the primary antibody CD3, CD20, CD30 (Ponce et al., 2010); (Dako, Denmark) 37°C for 1 h,
washed three times with Tris-buffered saline (5 min each) and incubated with secondary antibody-biotinylated anti-rabbit (Vector Labs, US) for 1 h at room temperature. After treating the slides with HRP-conjugated avidin-biotin for 1 h at room temperature, color was developed with 3, 39-diamino Benzidine (DAKO), counterstained with haematoxylin, mounted with permount and examined under the microscope. Sections from a known breast positive cancer served as the positive control, while those without addition of primary antibody served as negative controls.

The cytological slides were stained with Fields stain and revealed cells with large size and large, eccentric nucleus, occasionally with double nuclei in a few areas. Background showed few neutrophils, lymphocytes and RBC’s Fig.2.

Fig.1. Severely ulcerated, irregular mass from the hindlimb; Fig.2. Sheets of hyperchromatic cells separated by thin connective tissue. H&E X100; Fig.3. Pleomorphic, large nuclei of lymphoma cells with mitosis. H&E X400; Fig. 4. Cells showing CD 3 positivity on immunohistochemistry. (400X); Fig.5. Cells showing CD 30 positivity on immunohistochemistry. (400X); Fig.6. Cells showing CD 20 negativity on immunohistochemistry.

Histopathology of tumor revealed most often thinned out stratified squamous epithelium with underlying sheets of round cells showing large, pleomorphic nuclei. The cells have a typical plasmacytoid appearance. Very often these cells infiltrate the dermal appendages and vessels. Mitosis of the nuclei is seen very often Fig. 3. The tumors which had ulceration on the surface microscopically revealed infiltration of neutrophils. Differential diagnosis with mast cell tumor was ruled out due to absence of basophils in the section. Mast cells and basophils are differentiated because both have similar granules.
Immunohistochemistry was carried out on two of the five samples to further subtype them. The markers used were CD 3, CD 30 and CD 20 to differentiate between B cell subtype and T cell subtype. Both cases were of T cell origin showing CD30 and CD 3 positivity and CD 20 negative. By morphology, these were classified as a Peripheral T cell lymphoma and an Anaplastic Large Cell Lymphoma Fig.4, Fig.5 and Fig.6. T cell cutaneous lymphomas have shown to be more common than their B cell analogues as also reported by Teske (1994).

None of the cases were presented with nodal involvement at the time of surgery. On follow up, two dogs had nodal involvement and showed subsequent mortality. The cause for mortality could not be linked to the spread of tumor. Cases with circulating lymphoblasts similar to Sezary syndrome in man have been cited in literature (Shadduck et al., 1978; Thrall et al., 1984) but have not been encountered in the present study.

The authors would like to bring to notice the possibility of higher cases of cutaneous lymphomas in general population than earlier predicted. Cutaneous lymphomas should also be considered as a differential in cutaneous tumors to minimize chances of misdiagnosis. There are hypotheses about a viral etiology for lymphomas which is yet to be proven and requires further research as also mentioned by Fournel-Fleury et al. (2002).

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References


