EXPRESSION OF LUTEINIZING HORMONE RECEPTOR IN CANINE CUTANEOUS MAST CELL TUMORS

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Mast cell tumor (MCT) is the most common cutaneous tumor in the dog. Gonadectomy is significantly associated with increased incidence of MCT in dogs[1]. Without the negative feedback from gonadal steroids, luteinizing hormone (LH) concentrations are over thirty times the concentration in gonadectomized dogs than intact adult dogs. LH-receptors (LHR) are present throughout the body[2]. Elevated LH has been associated with many disorders including hypothyroidism and hemangiosarcoma[3]. LHR activation is involved with cell division, which may explain the relationship between LH and certain cancers. We hypothesized that MCT from gonadectomized dogs would express more LHR than MCT from intact dogs. To test this hypothesis, immunohistochemistry was performed on formalin-fixed paraffin-embedded archived biopsy tissues from cutaneous MCT. Tumor diagnosis was confirmed by a board-certified pathologist through examination of hematoxylin and eosin stained sections and tumor grades were assigned using both the Patnaik and Kiupel grading systems[4]. Sections were stained for LHR using a rabbit polyclonal anti-human antibody at 1:50 dilution. Serial sections stained with non-specific anti-serum served as negative controls. Images were digitally captured using a light microscope at 400X magnification. The percentage of LHR positive mast cells was determined from counting 200 cells per tumor. Comparisons were made between intact and gonadectomized dogs using a Student's t test. Significance was defined as $p<0.05$. LHR immunolocalization in MCT mirrored previously described KIT-staining patterns in MCT[4]. The percentage of all LHR-positive mast cells and the percentage of LHR-positive mast cells exhibiting KIT-type 2 localization was significantly higher in gonadectomized dogs compared to intact dogs (Table 1). Increased cytoplasmic KIT staining (type 2 and 3) is shown to be significantly associated with an increased rate of local tumor recurrence and decreased survival time. Future studies will focus on investigating MCT tumor recurrence and survival time following LH downregulation using a GnRH agonist treatment.

	Positive	Type 1	Type 2	Type 3
Intact (n=6)	64.3±4.2%	1.9±1.4%	49.2±8.4%	13.2±9.7%
Gonadectomized (n=5)	84.2±8.7%	1.9±0.8%	66.6±15.3%	15.7±12.1%
	p=0.00	p=0.49	p=0.02	p=0.35

Table 1. Mean±SD percentage of LHR positive mast cells. Type 1-3 refers to a previously described KIT-staining pattern in cutaneous MCT that LHR immunolocalization appears to follow.

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