

Canine Mast Cell Tumor

Canine mast cell tumors are aberrant overgrowths of a type of resident granulocyte in tissues called mast cells. Mast cell tumors are very common in dogs, accounting for anywhere between 11-20% of all skin tumors. Predisposed breeds include Boxers, Staffordshire Bull Terriers, Boston Terriers, Bulldogs, Labrador Retriever, Golden Retrievers, Beagles, Scottish Terriers, Weimaraners, Rhodesian Ridgeback, German Short-Haired Pointer, Chinese Shar-Pei, and Schnauzer. Of the predisposed breeds, Boxers appear to have the highest incidence of disease. Tumors typically develop in older dogs (mean age 8-9 years) and may appear in any internal organ, including circulating in the blood. Skin tumors are most commonly found on the limbs, especially the posterior upper thigh, ventral abdomen and thorax. Most often times the tumors are solitary raised masses or lumps in or just underneath the skin. Tumors may be soft or solid on palpation, and potentially may ulcerate. In roughly 10% of cases multiple skin masses are found. Mast cell tumors are often locally invasive with microscopic extensions spreading from the mass. Mast cells produce many different vasoactive substances that are part of the body's normal allergic response. These substances include histamine, prostaglandins, and heparin. Mast cell tumors may spontaneously degranulate causing massive inflammation leading to acute changes in the size of the mass, gastric ulceration (histamine increases gastric acid secretion), and hypotension. Diagnosis is made either with fine needle aspiration or biopsy of the tumor. Further diagnostic tests that may be recommended include abdominal ultrasound, regional lymph node aspiration and bone marrow aspiration. A biopsy is required to determine grade which can be used to predict biological behavior. This is vital for determining the appropriate treatment. Low grade tumors with no metastases often may be treated with surgery alone and have an excellent prognosis. Prognosis is poor for higher grade tumors as these are more likely to metastasize and recur locally post-surgical removal. If evidence of metastasis is noted then chemotherapy may be used to help slow progression of disease. Radiation therapy may also be used either in conjunction with surgery or alone to control local disease. Targeted therapies are available that target a receptor, called KIT, which is commonly mutated in mast cell tumors. Similar mutations are found in several human cancers including systemic mastocytosis, gastrointestinal stromal tumors, and small cell lung cancer.