

Canine mast cell tumors (MCTs) are the most commonly diagnosed skin tumor in dogs. Mast cells are a normal part of the immune system and play a role in allergic disorders. They possess granules that contain certain inflammatory substances, such as histamine and heparin.

Mast cell tumors are usually found in middle-aged to older dogs; several breeds seem to be at increased risk for MCTs. These include:

- dogs of bulldog descent (Boxer, Boston Terrier, English Bulldog, Pug)
- Labrador Retriever
- Golden Retriever
- Cocker Spaniel
- Schnauzer
- Shar Pei.

Mast cell tumors vary widely in shape and size and it is impossible to identify one just by appearance. When underneath the skin they may appear very similar to a lipoma, a benign fatty tumor.

Cytologic evaluation of a mass/tumor with a fine needle aspirate is the most common method of diagnosing MCTs. This involves sticking the mass with a needle and removing cells, usually performed while the patient is awake. Cells are then examined under a microscope.

While the diagnosis of a MCT can usually be made with fine needle aspiration, a biopsy is required for histologic grading of the tumor. This requires that either the entire tumor or a small portion it is removed and submitted to a pathologist. The grade is determined by multiple factors, including the appearance of the cells and the degree of invasion into underlying tissues.

There are three different grades of MCTs:

Grade I MCTs are usually very small and have a low metastatic rate. Patients with these tumors have an excellent prognosis when the tumor is completely removed with surgery.

Grade II MCTs are more invasive and their behavior is more difficult to predict. Most diagnosed MCTs will be grade II tumors. In addition, the majority of grade II tumors will behave like grade I tumors and can be cured with surgery alone. However, there is a subset of grade II tumors that will behave aggressively and can spread to other areas of the body (lymph nodes, spleen, and liver).

Factors evaluated to try to predict whether or not a grade II tumor will behave aggressively include the growth rate of the tumor, the tumor's location, the mitotic index of the tumor, other proliferation markers (AgNOR count, Ki67, PCNA), and whether or not there is a c-kit mutation. Chemotherapy following surgery may be indicated for some patients with grade II tumors when other concerning prognostic factors are present.

Grade III MCTs are aggressive tumors with a high metastatic rate (50-95%). We still recommend surgical removal of these tumors, but treatment with chemotherapy is indicated following surgery to try to slow or prevent the spread of the cancer.

For any grade tumor, performing diagnostic tests to evaluate the extent of cancer is indicated. This is called "staging." For canine MCTs, this typically involves aspirating lymph nodes and potentially performing an abdominal ultrasound.

The following defines the staging system for canine mast cell tumors:

Stage I: single tumor confined to dermis without regional lymph node involvement

Stage II: single tumor confined to the dermis with regional lymph node involvement

Stage III: multiple dermal tumors or large infiltrating tumors, with or without regional lymph node involvement

Stage IV: any tumor with distant metastases

Surgery, chemotherapy, and radiation therapy can all be used to treat canine MCTs. The exact treatment recommendations will depend mainly on whether or not surgery can be performed to remove the tumor with clean margins, the grade of the tumor, and the stage of the cancer.

We are pleased to provide the services of Carrie Hume, VMD, DACVIM, Idaho's only board certified small animal oncologist. Please contact our office if you have any questions regarding oncology care for your pet.