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Canine Mast Cell Tumors

Mast cells are a special type of blood cell that is normally involved in the body's response to allergens and inflammation. Sometimes, these cells can become cancerous and develop into mast cell tumors. The most common locations for these tumors are the skin, spleen, liver, and bone marrow. They are malignant tumors that have the ability to spread to other organs. Even though we know a lot about mast cell tumors, it can be difficult to predict how they will behave in an individual dog.

Mast cells contain substances that could be released into the bloodstream and potentially cause systemic problems. This would include gastric ulceration, bleeding, and allergic reactions (anything from swelling around the tumor to life threatening shock). Therefore, we often put our patients on antihistamines, antacids, and corticosteroids as part of their treatment.

Most of the remaining information will focus on cutaneous (skin) mast cell tumors because they are the most common type seen in dogs.

Cutaneous (skin) mast cell tumors

The skin is the most common site for mast cell tumors in the dog. They are usually located in the skin of the legs or body. These tumors are locally aggressive and can also metastasize (spread) to other areas of the body. The most common sites of spread are the lymph nodes, bone marrow, and spleen. Cutaneous tumors are most often diagnosed by performing a fine needle aspirate (FNA) of a skin mass and identifying mast cells on cytology.

The initial evaluation of a dog with a mast cell tumor includes: biopsy, complete blood count (CBC), serum chemistry profile, lymph node aspirate, and an abdominal ultrasound (to look at the liver and spleen). In some cases, a lymph node biopsy, abdominal ultrasound, and bone marrow aspirate may be done to look for tumor cells in other places.

The pathologist assigns a "grade" to the tumor when he looks at it under the microscope. A biopsy specimen is needed to grade tumors. A fine needle aspirate is not sufficient to assign a grade to a tumor. We use the grade to help predict how the tumor will behave. This influences both the prognosis (outcome) and treatment plan. For example, low-grade tumors are unlikely to spread so that complete surgical removal of the tumor may be the only treatment required. High-grade tumors have a very high chance of spreading so we look very carefully for spread and consider using systemic therapy (such as prednisone or other chemotherapy drugs) in addition to local therapy

(such as surgery or radiation).

Treatment options

Treatment options for cutaneous mast cell tumors include surgery, radiation therapy, chemotherapy, and supportive care.

Surgery is usually our first treatment choice. Because these tumors are invasive, the surgeon must remove the tumor with a large margin of normal tissue both around and underneath it to ensure complete removal. Mast cell tumors are deceptive and sometimes what we can see and feel represents only a small part of the tumor. Even when a large margin is taken, sometimes tumor cells are still left behind. When this occurs, additional treatment is needed; otherwise, there is the chance that the tumor might return. Options include another surgery or radiation therapy. It may not be possible to do another surgery because of the location of the tumor (e.g. tumors on the leg are difficult to completely remove because there is not much extra skin). In this case, radiation therapy is a good alternative. Radiation therapy is very effective at preventing local recurrence of these tumors.

It is important to remember that surgery and radiation therapy are local treatments and have no effect on the spread of the tumor. Chemotherapy can be beneficial in treating metastasis since it is a systemic treatment. In the case of mast cell tumors, prednisone (a corticosteroid or “cortisone”) is one of the most effective chemotherapy agents available. In the case that systemic treatment is required, we will usually refer to an oncologist to institute appropriate chemotherapy protocols. The most common side effects of prednisone include increased thirst, urination, appetite, and panting. Prednisone can also cause gastrointestinal upset and rarely, gastric ulcers.

As mentioned above, we prescribe additional medications to prevent tumor related side effects. These include an antihistamine (Benedryl) and sometimes an antacid (Pepcid or Tagamet). We also ask that you watch your pet closely for any problems such as vomiting (especially if there is fresh blood), diarrhea, loss of appetite, or a very dark or black stool (this is a sign of digested blood). If any of these signs occur, contact us.

The prognosis (outcome) for cutaneous mast cell tumors depends upon several things including the “grade” of the tumor, the location of the tumor, and the presence of metastasis. Many of these tumors are successfully treated if there is no evidence of spread at the start of treatment. Any future “lumps” and “bumps” should be evaluated with and aspirate because dogs that have had one mast cell tumor are at greater risk for the development of additional mast cell tumors. Early detection of these tumors will increase the likelihood of successful treatment.

For those tumors that have already spread or that occur in locations other than the skin (e.g. the spleen), the prognosis is guarded. The goal of treatment for these patients is to maintain a good quality of life for as long as we can by controlling

symptoms cause by the presence of mast cells in the body. Symptoms can include vomiting, diarrhea, anorexia (loss of appetite) and lethargy (tiredness). Unfortunately, most of these dogs will die within 6 months because we can no longer control these symptoms.