

# Southern California Veterinary Specialty Hospital

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## MAST CELL TUMORS

Mast cells are normal cells in the body which start in the bone marrow and then mature in the skin and other tissues. Mast cell tumors occur when one of these cells begins dividing uncontrollably and form a lump. Mast cell tumors are the most common malignant skin cancer in dogs. They are less common in cats. They can also form in the internal organs. A genetic predisposition is suspected, but the exact cause of this cancer is unknown. Certain breeds, such as Boxers, Pugs, Pit Bulls, Labrador Retrievers and Sharpeis, are at a higher risk for developing mast cell tumors.

Both normal and cancerous mast cells contain hundreds of chemical beads. These beads contain different substances, the most important being histamine and heparin. When these chemicals, particularly histamine, are released by mast cell tumors into the normal body tissues, side effects can include digestive tract upset (including bleeding ulcers), skin rashes, shortness of breath, collapse and rarely death.

### Diagnosis

Mast cell tumors appear as soft, movable lumps under the skin or raised pink or red “buttons” on the surface of the skin. Mast cell tumors can increase and decrease in size (even disappear and reappear!) as chemicals are released by the tumor. Most mast cell tumors can be diagnosed by obtaining a sample with needle and syringe, and examining a few cells under a microscope. Sometimes, part of or all of the tumor must be submitted to a laboratory for an accurate diagnosis. Blood tests cannot diagnose mast cell tumors unless the cancer cells are actually present in the blood stream, a condition that is rare.

Your pet’s treatment plan can best be determined after we discover the extent of the cancer through a combination of tests known as *staging*. Tests utilized include physical examination, chest radiographs, abdominal ultrasound, blood analysis and microscopic evaluation of cells from lymph nodes, spleen and/or liver.

Another factor that helps to determine treatment options and prognosis is the examination of a solid section of the tumor(s) under a microscope for *grading*. Accurate grading requires a surgical biopsy sample and evaluation by a pathologist. Tumors are graded 1-3. Grade 1 tumors are thought to behave in the most benign fashion, while grade 3 tumors have a greater tendency to recur locally and/or spread. Grade 2 tumors fall somewhere in between. Occasionally, a proliferation panel may be done on the tissue sample. This gives further information in regards to the risk of local recurrence and/or spread.

### **Treatment – Surgery**

Surgery is generally the “first line” and most effective form of treatment for solitary mast cell tumors. A wide margin of normal-appearing skin must be removed from around and beneath the tumor to attempt to eliminate *all* of the cancer cells. The edges of the tissue are examined under a microscope to determine if any cancer cells may still be present in the patient.

Problems with healing at the suture line and regrowth of the cancer may occur when cancer cells are left behind. If your pet’s tumor has not been completely removed, additional therapy, such as a second surgery or radiation therapy may be recommended.

### **Treatment – Radiation Therapy**

Radiation therapy uses a source of energy to kill cancer cells in a specific local area on the patient’s body. Radiation is most effective when only microscopic amounts of a tumor are present. A series of treatments is necessary for tumor control. The side effects and expense are usually greater with radiation than with surgery, but radiation can be performed in areas where further surgery is not possible or would be deforming. Radiation therapy can be very effective in obtaining long term control of many mast cell tumors.

Sometimes a mast cell tumor is too large or aggressive to be eliminated by surgery and/or radiation therapy. A weekly series of 5 radiation treatments may be effective in reducing the size and discomfort of a tumor. This process is called *palliative radiation therapy*.

### **Treatment – Tyrosine Kinase Inhibitor - Palladia/Masitinib**

This is a new type of drug specifically designed for the treatment of canine mast cell tumors. It targets tumor cells and decreases the blood supply which should ultimately keep the tumors from growing. This treatment is administered orally at home. Usually, this drug is given every other day or on a Monday/Wednesday/Friday basis. In addition, prednisone (a member of the cortisone family) may be given on the alternate days (Tuesday/Thursday/Saturday).

### **Treatment - Chemotherapy**

Chemotherapy is the most effective form of therapy for mast cell tumors that are high grade or that have already spread. Most chemotherapy medications are given as intravenous (IV) injections. Other medications are available as tablets and can be given at home. Although many medications have been effective against mast cell tumors, chemotherapy is most effective when combinations of different drugs are used. Different drug combinations, or *protocols*, are available and range in cost, effectiveness, frequency of visits and side effects will depend on the protocol. As oncologists, we will help you decide which protocol is best for your pet.

These medications typically do NOT cause significant side effects. You may be familiar with the side effects of chemotherapy in people. Fortunately, animals tend to experience few in any of the severe side effects seen in people. However, side effects may occur and symptoms can range from a mild, temporary decrease in appetite to anorexia, loose stool, vomiting and fever. Most dogs do not lose hair from chemotherapy, unless they are terriers or poodles. Cats may lose their whiskers. Again, most pets have no symptoms. *Our philosophy is that cancer patients should feel better, not worse, from their chemotherapy!*

### **Treatment - Symptomatic**

Your pet will need to be on medication used to block the effects of histamine release by the tumor. These drugs usually include prednisone, Benadryl and Pepcid. Prednisone can cause an increase in appetite, drinking and urination, and some dogs feel restless and may pant more than usual. As in people, the antihistamine, Benadryl, may cause drowsiness. However, the benefit of these medications generally outweighs the potential side effects. Many patients can live comfortably for awhile with prednisone, Benadryl and Pepcid even if the actual mast cell tumor fails to respond to treatment.

### **Combination therapy**

For many patients, a combination of the above treatments improves our ability to control mast cell tumors.

### **Prognosis**

Mast cell tumors are often very unpredictable. The effectiveness of treatment depends on how advanced the disease is and whether your pet has other problems. Some patients are cured with a relatively simple surgery, while others survive only a few months despite aggressive therapy. We are still learning about the factors that result in a wide range of life expectancy. As individuals, each of our patients will have a slightly different response and outcome. *Our goal is to maintain the best quality of life possible!*

### **Future Considerations**

Once a mast cell tumor is diagnosed, there is a risk for future development of other mast cell tumors. If these other mast cell tumors occur in another location in the skin, they *are not* considered to be spread of the first tumor, but rather separate primary locations. It is important that you check your pet carefully for new skin masses of any kind. They should be brought to the attention of a veterinarian so that they may be evaluated by physical examination and microscopic analysis.

Additionally, if your pet has been diagnosed with a mast cell tumor that is considered to be at high risk for spread to other organs or local recurrence, re-evaluation via physical examination, blood analysis or abdominal ultrasound may be recommended at periodic intervals after the first tumor has been treated.