Mast Cell Tumors

By Dr. Karen Becker

Hi! This is Dr. Karen Becker. Today we are going to discuss mast cell tumors.

Mast cells are found in all tissues of the body, but are in especially high numbers in the skin, respiratory tract, and GI tract. Mast cells contain histamine and heparin. They play a role in allergic responses, non-allergic skin diseases, wound healing, and tissue remodeling. They can also increase stomach acid production.

When normal mast cells replicate in higher than normal numbers, a mast cell tumor can form. Pets with mast cell tumors can have complications like stomach problems from the overproduction of histamine and excessive bleeding from the release of heparin. Mast cell tumors occur in both dogs and cats. Although they can be benign, most mast cell tumors are malignant, or cancerous.

Mast cell tumors vary widely in their appearance, shape, and size. Dogs usually develop a single tumor. More cats than dogs develop multiple tumors. If your pet has a mast cell tumor on the skin, there'll be a bump or lesion of some kind. Sometimes it’s a raised pink bump that looks like a number two pencil eraser on the surface of the skin. Sometimes the tumor will be a less-defined mass that feels like a lump under the skin.

Definitive diagnosis of a mast cell tumor is made through physical examination and testing, including tumor aspiration or biopsy. If the fine needle aspirate reveals mast cells, the surgeon will be much better prepared to take the large margins required, which reduces the likelihood of leaving tumor cells behind. I think this is really important.

The tissue that is removed is sent to the pathologist for staging or grading, which will give your vet the information necessary about how extensive the disease is, and what type of treatment is needed then for follow-up care.

Mast Cell Tumors in Cats

In cats, mast cell tumors are usually seen in the skin of the head and neck, although they can occur anywhere in the body. Cats with these tumors are usually over four years of age, but they can occur at any age. We have even seen mast cells in kittens.

Interestingly, Siamese cats are at higher risk than other breeds of kitties. They develop a specific type of mast cell tumor called the histiocytic mast cell tumor.

In the majority of feline cutaneous or skin mast cell tumors, the goal is to have surgery completely remove the tumor. Usually, surgical intervention is curative, which means that one round of surgery removes the mast cell. Oftentimes in cats, mast cell cutaneous lesions are benign. In some cases, surgery isn’t even needed because the mast cells can resolve on their own.
Unfortunately, cats with mast cell tumors on the inside of their bodies, not the outside – internal mast cell tumors that occur in the GI tract or spleen – carry a much poorer prognosis than mast cells occurring on their skin.

**Mast Cell Tumors in Dogs**

In dogs, mast cell tumors are most often found on the trunk, limbs, and in between the toes. They occur more often in some breeds more so than others. The boxer, Boston terriers, English bulldogs, bull terriers, fox terriers, Labs, doxies, and Weimaraners are all at increased predisposition.

Prognosis for dogs with mast cell tumors depends on the location, the extent of the tumor, the grade, and the type of treatment that was given. Mast cell tumors of the skin are very different in dogs than cats. Surgery to remove the tumor is less invasive in cats, and the prognosis for a full recovery is much better in cats than in dogs.

Mast cell tumors with generally poor prognosis are those on the muscle, tumors that occur around the mouth or in internal organs, tumors found in the bloodstream or bone marrow, or those that are ulcerated. If mast cell tumors are causing GI ulceration or are large, fast-growing, or recurring -- all of those particular tumor types carry a much poorer prognosis.

**Prognosis of Mast Cell Tumors in Pets**

Historically, mast cell tumors have been graded on a scale of one to three in dogs – with three being the most serious in carrying a poor prognosis. Grade one mast cell tumors generally have an excellent curative rate as long as the whole thing was removed, and oftentimes dogs are doing great. Thirty weeks post-mast cell removal for a grade one tumor is considered curative as long as there is no recurrence of tumors within that timeframe.

Even with aggressive surgery, the recurrence rate for a grade two mast cell tumor is about 20 percent. The majority of dogs with a grade three malignant mast cell tumors will experience spread of the tumor. Only about 10 percent of these dogs live past a year of surgery.

Recently, a 2-tier histologic rating system for canine cutaneous mast cell tumors has been proposed to more accurately predict biologic behavior. This particular category system lumps an animal’s tumor, categorizing into either a low-grade or a high-grade – carrying a good prognosis for full recovery for a low-grade or a high grade, which carries a poor prognosis for recovery.

In addition to histopathology or looking at the cancerous tissue microscopically, vets now have the option to perform cell-proliferation analysis through Michigan State University Diagnostic Lab. I recommend this. This new technology analyzes three
markers to assess the risk of systemic disease. Vets that use this technology to help formulate a treatment plan will have a much more accurate blueprint of what’s really going on in a mast cell patient’s body.

Treatment and Prevention in Pets

If your pet has been diagnosed with a mast cell tumor, work with an integrative or holistic vet to reduce the risk of recurrence. There are supplements that can naturally help reduce mast cell degranulation and reduce histamine release.

If your pet has been diagnosed with a mast cell tumor, I recommend that you eliminate carbohydrates or pro-inflammatory foods from the diet. I recommend that you supplement your pet’s diet with a rich source of omega-3 fatty acids such as krill oil. And I absolutely recommend that you never vaccinate a mast cell patient ever again.