

# Mast Cell Tumors in Dogs

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## BASIC INFORMATION

### Description and Causes

These tumors are composed of a white blood cell called a *mast cell*. Mast cell tumors (MCTs) are the most common malignant skin tumor of dogs. The cause is unknown, but a virus that causes mutations has been proposed, because many dogs with MCTs have mutations in a specific gene that may be responsible for the creation and/or progression of MCTs.

MCTs usually develop in middle-aged to older dogs but are occasionally found in dogs as young as 4 months. They occur commonly in the boxer, Boston terrier, bull terrier, bullmastiff, Staffordshire bull terrier, fox terrier, English bulldog, dachshund, Labrador retriever, golden retriever, beagle, pug, Chinese shar-pei, Rhodesian ridgeback, and Weimaraner. All MCTs in the dog are considered potentially malignant.

### Clinical Signs

These tumors are generally hairless, red, swollen bumps that vary in size (less than 1 inch up to several inches). They often occur on the trunk (body), head, and legs. Sometimes, tumors on the legs and lips look only like areas of swelling. Rarely, if substances such as histamine and heparin are released from the tumors all at once, generalized swelling, poor blood clotting, low blood pressure (weakness, lethargy), and even death can occur.

### Diagnostic Tests

Taking a sample of the tumor with a needle and examining the material under a microscope (cytology) is often helpful, because mast cells are unique. The grade or stage of tumor (severity of malignancy) can be determined only if the tumor is biopsied. Biopsy can be done in some tumors prior to removal, or the entire tumor can be removed and submitted for biopsy. MCTs are classified as stage I, II, or III. Stage III is the worst (most malignant).

Once a diagnosis of MCT is confirmed, other tests are needed to look for spread (metastasis) of the tumor. Examples include:

- Checking nearby glands (lymph nodes) for mast cells
- Examining blood cells and the bone marrow for mast cells
- Performing an abdominal ultrasound to check the liver, spleen, and other organs
- Obtaining x-rays of the chest

## TREATMENT AND FOLLOW-UP

### Treatment Options

Surgery is the most common treatment option and is done early as possible. If possible, a large area of normal tissue around the tumor is removed to try and prevent the tumor from coming back. All of this tissue is examined by the pathologist to determine whether the MCT has been completely removed.

If complete removal is not possible with surgery, radiation therapy or chemotherapy may be recommended. These treatments are used for some stage II and many stage III MCTs. Occasionally, certain antihistamine medications may be given to control the problems associated with histamine release.

### Follow-up Care

Recheck examinations every 3-4 months are used to monitor the dog for new bumps and to check for metastasis to regional glands or internal organs. Laboratory tests (as often as every 1-3 weeks) are needed to monitor for the side effects of chemotherapy drugs.

### Prognosis

Survival rates of dogs are about 83% with stage I tumors, 44% with stage II tumors, and 6% with stage III tumors. A bad prognosis is associated with tumors that grow rapidly, are located in deeper tissues, or cause the skin to be raw or ulcerated and when other signs are present.