



SOUTH CAROLINA
**VETERINARY
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State of the Art Care, In the Heart of the State

Mast Cell Tumors in Dogs

What are mast cells?

Mast cells are normal white blood cells that typically reside in the skin and other tissues. Mast cells have small granules within them that contain *histamine*, a substance that is instrumental in causing acute allergic responses. Hives are the most commonly seen mast cell associated reaction.

What is a mast cell tumor?

Mast cell tumors are a cancerous growth of mast cells. While these tumors typically originate in the skin, they can spread to internal organs as well.

What types of mast cell tumors affect dogs?

Mast cell tumors associated with the skin are variable in their behavior and are graded based on biopsy characteristics. Mast cell tumors of any grade can occur as single or multiple tumors. Grade 1 tumors are superficial and can be cured with surgery. Grade 2 tumors are more aggressive locally but can be cured with surgery (and adjuvant chemotherapy in some cases) and tend not to cause systemic disease if treated appropriately. Grade 3 tumors are both locally aggressive and highly metastatic, even if surgical excision is complete. Systemic mast cell disease involving the blood or internal organs is a rare and very aggressive form of the disease.

What causes mast cell tumors?

Cancer is caused by a combination of environmental and genetic factors. While certain breeds are predisposed to mast cell tumors (Boxers and Boston Terriers, for example), a specific cause is usually not identified.

What clinical signs do mast cell tumors cause?

Most patients with mast cell tumors have no clinical signs other than the skin mass or masses that may be present. As mast cell tumors become more aggressive, grow in size, or become systemic in nature, other clinical signs may develop.



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Clinical signs may include:

- Enlarged lymph nodes
- Itchiness (especially the tumor site)
- Vomiting
- Anorexia
- Labored breathing
- Weakness
- Lethargy
- Diarrhea

What laboratory changes do mast cell tumors cause?

Most patients with mast cell tumors have no laboratory abnormalities. In more advanced or severe disease, internal organ function may be affected and mast cells may enter the blood stream.

What testing is recommended for mast cell tumor patients?

In evaluating patients with mast cell disease, our primary concern is to make certain that there are no other underlying diseases present that may affect treatment. Routine screening urinalysis, CBC and chemistry are performed to ensure that this is the case. Depending on the grade of tumor and how aggressive the disease is, abdominal and thoracic radiographs may be recommended to evaluate for internal organ changes that can not be assessed with physical examination. Patients may also require ultrasound examination, bone marrow aspirates, or other more specific testing.

Most patients evaluated for mast cell disease will need the following tests:

- Chemistry profile
- Complete Blood Count (CBC)
- Urinalysis

What treatment options are available for mast cell tumor patients?

Many patients with mast cell tumors can be successfully treated with surgery alone or in combination with chemotherapy. Some patients may also require radiation therapy, but this is uncommon. Chemotherapy is highly effective in treating this disease and is recommended in all cases of grade 3 and many cases of grade 2 tumors. The chemotherapy drugs used for this disease generally cause very few side effects. The specific treatment plan will depend on the individual case and we will discuss the treatment options with you at the time of your appointment. Please see our



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chemotherapy handout for more specific information on these drugs and the side effects that can be seen.

What is the prognosis with mast cell tumors in dogs?

Grade 1 and 2 mast cell tumors carry a very good prognosis with complete surgical excision. If there is incomplete surgical excision, follow-up chemotherapy or radiation therapy are excellent options with a good long term prognosis. Because of the systemic nature of Grade 3 tumors, chemotherapy rather than radiation is typically recommended. Grade 3 tumors in particular are more likely to develop into unresponsive or life-threatening disease. The prognosis depends on the history, clinical signs, and type of mast cell tumor present. We will discuss the specifics of your dog's case at the time of your visit.