



## CANINE CUTANEOUS MALIGNANT MELANOMA

### **What is malignant melanoma?**

Malignant melanoma (MSA) is a cancer of pigmented cells called melanocytes. Cutaneous malignant melanoma may occur in the nail bed or on the foot pads. Melanomas that arise from the haired skin of the body, legs, or eyelids are usually benign but in rare cases can exhibit aggressive behavior similar to those of the nail bed, foot pads or mouth. Malignant melanoma can be a very aggressive cancer in dogs with moderate potential for metastases, or spread, to other parts of the body, particularly the lymph nodes and lungs. Early, aggressive treatment is important to improve outcome for patients with cutaneous malignant melanoma.

### **What are the symptoms?**

Melanomas that arise from the nail bed may appear as a discrete mass, an ulcerative lesion, or a diffuse swelling of the affected toe. Melanomas may also arise from the footpads and cause lameness as the first symptom. Nail bed and foot pad tumors are often secondarily infected and initially diagnosed as chronic infections. The majority of the melanomas that arise from the haired skin are benign. Behaviorally malignant melanomas tend to grow rapidly, are larger, poorly circumscribed, and ulcerated.

### **How is it diagnosed?**

Surgical removal with histopathology or incisional biopsy is required for definitive diagnosis of malignant melanoma. For tumors arising from the nail bed, radiographs of the affected toe should be performed prior to treatment as melanomas will often result in bone destruction. Careful examination of the draining lymph nodes is also important. Fine needle aspirates of the lymph nodes are performed in most patients, especially when the lymph nodes are enlarged. X-rays of the lungs are very important to evaluate for metastatic disease, prior to planning treatment.

### **How is it treated?**

#### **Surgery**

Surgical excision is the treatment of choice for local cutaneous melanomas. For nail bed tumors, amputation of the affected bone is often required due to extensive bone involvement. Melanomas of the foot pads present a challenge for surgical removal. Many tumors will involve the larger weight-bearing pads, where surgery may be limited due to loss of function of the leg. In some patients, amputation of the leg may be the best option for achieving local tumor control.

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## **Radiation therapy**

Radiation therapy may be beneficial for the treatment of large, unresectable melanomas or as an adjunct to tumors with incomplete margins following aggressive surgical excision. Melanomas respond more favorably when radiation is given in large “fractions” or doses, on a less frequent schedule. Radiation therapy is administered once weekly for 4 treatments. General anesthesia is required to keep your pet still during the treatment. Side effects with this schedule are minimal but may include transient sloughing of the nails or foot pads. The nails and foot pad surface will regrow and should not cause long term problems. Please refer to the handouts on radiation therapy for more detailed information. Radiation is primarily a local treatment and will not necessarily address the potential for metastases.

## **Chemotherapy**

There are no controlled studies in dogs that address the benefits of chemotherapy as an adjuvant to surgery and/or radiation therapy for cutaneous malignant melanoma. Carboplatin appears to be the most effective chemotherapeutic based on several studies in dogs with unresectable tumors. We are currently recommending carboplatin chemotherapy in combination with surgery and/or radiation therapy. Carboplatin is administered intravenously once every 3 weeks for a total of 4 treatments. Carboplatin is well tolerated in dogs, and side effects are minimal. Although our clinical impression is that carboplatin is beneficial in improving survival over surgery or radiation alone, there are no published studies to confirm a survival advantage with the use of carboplatin or by how much time survival is improved.

## **What is the prognosis?**

Cutaneous malignant melanomas have the potential for aggressive local behavior and metastases. Up to 50% of the melanomas of the nail beds and foot pads will metastasize. Although there is no good means to predict which dogs are at higher risk for metastases, the mitotic rate reported on the biopsy report may be helpful in some patients. A mitotic rate of less than 3 is strongly associated with more benign behavior and lower risk of metastases. Recurrent malignant melanomas have a less favorable prognosis than the initially treated tumor.

Radiation therapy is effective for nonresectable melanomas, with many dogs achieving a complete regression of tumor. Radiation therapy is also effective as an adjunct treatment of incompletely removed cutaneous melanomas. However, metastases still remains a problem in up to 50% of patients.

Chemotherapy with carboplatin may be beneficial in delaying or preventing the onset of metastases in dogs with cutaneous melanomas; however no published studies exist to confirm a survival advantage with the use of chemotherapy.

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