



Melanomas

Melanomas – General Information for Animal Owners

Dirsko J.F. von Pfeil, Dr.med.vet., DVM, DACVS, DECVS; Mike Edwards, DVM, MS, DACVS

Melanoma is a malignant tumor of melanocytes. Melanocytes are normally present in skin, being responsible for the production of the dark pigment melanin. Such cells are found predominantly in skin but are also found in the bowel and the eye. Sometimes melanomas are categorized as a round cell tumor because they are typically round, raised, and darkly pigmented. Despite many years of intensive laboratory and clinical research, early surgical resection of skin tumors still gives the greatest chance of cure. Melanomas demand immediate attention. They are more common in dogs with heavily pigmented coats (Airedale's, Scottish terriers, spaniels and schnauzers). Fortunately most cutaneous (skin) melanomas are benign, but individual growths need to be evaluated as unique and unpredictable since any given melanoma may become malignant.

Benign cutaneous melanomas of dogs are usually seen as round, firm, raised, darkly pigmented masses from one-quarter to two inches in diameter. They occur most often on the head, digits or back and generally do not metastasize. However, biopsy of these tumors is recommended to establish the degree of malignancy. Mitotic indexes of 3-10/HPF are associated with benign behavior. In contrast, cases of high malignancy have been associated with metastatic rates of 30-70%.

Malignant melanomas can metastasize to any area of the body and often spread to the lymph nodes and lungs, which present very challenging and dangerous prospects for the dog. Specific locations are typically associated with more aggressive behavior with a higher metastatic potential such as in a digit, scrotum or oral cavity. The presence of malignant melanoma may be first discovered in the lungs where diffuse pulmonary infiltration of tumors will be displayed throughout the lung tissue on a radiograph (x-ray). Oral melanomas have been reported metastasize in 16-67% to the lungs. Lymph node swelling or enlargement may be a sign of malignant spread of a melanoma. Some melanomas do not display the characteristic darkly pigmented color of most melanomas (amelanotic melanomas).

Treatment for melanomas that occur on the skin is surgical removal of the tumor and nearby surrounding tissue, or amputation if it occurs in a digit.

Melanomas that are found in the mouth are more difficult to treat. Due to frequent metastasis to the lungs, these tumors are most often fatal unless prompt treatment is given to keep the cancer from spreading. Melanoma involving the oral cavity often necessitates radical removal of part of the jaw. Localized tumors may be completely removed and the patient cured in some cases. However, recurrence rates of 22-48% have been reported. Melanomas of the lips seem not to show the aggressive behavior compared with oral melanomas, and carry a better prognosis.

Chemotherapy given systemically is frequently not very successful in the treatment for melanoma. However, injections of chemotherapy into the tumor in addition to radiation therapy can be used. Malignant Melanoma is an immunogenic tumor, and immunomodulatory therapy is therefore a promising treatment modality. A new vaccine, called the Canine Melanoma Vaccine DNA, has recently been FDA approved and is recommended as sole or additional treatment for severely affected cases. The vaccine works by injecting a protein into the body, alerting the immune system to the presence of the melanoma tumor protein. The treatment protocol for this vaccine is one injection every other week for four vaccinations, followed by booster injections every six months. Studies from 2000 to the present have included more than 100 dogs with oral melanoma and have produced promising results. Although the effect of DNA vaccines varies from one animal to another, dogs that have participated in vaccine studies have recorded increased survival times. A long term study on the combination of surgery with and without the vaccine showed a survival time of 464 days for dog that underwent both treatments, versus only 156 days for dogs that underwent surgery alone.

The overall prognosis varies depending on the type of melanoma and stage. With complete resection the animals may be considered cured. However, complete remissions of metastatic melanoma cases are rare.

Your VSOA Team.

Sources: <http://www.caninecancer.com/skincancer.html>, Withrow and MacEwen's Small Animal Clinical Oncology, 4th ed, Saunders, 2007, <http://en.wikipedia.org/wiki/Melanoma>, Bergman PJ, et al. Development of a xenogeneic DNA vaccine program for canine malignant melanoma at the Animal Medical Center. *Vaccine* 2006;24:4582-4585. Bergman PJ, et al. Long-Term Survival of Dogs with Advanced Malignant Melanoma after DNA Vaccination with Xenogeneic Human Tyrosinase: A Phase I Trial. *Clinical Cancer Research* 2003;9:1284-1290. Grosenbaugh DA et al. Safety and efficacy of a xenogeneic DNA vaccine encoding for human tyrosinase as adjunctive treatment for oral malignant melanoma in dogs following surgical excision of the primary tumor *Am J Vet Res* 2011;72:1631-1638).