Melanoma

Disease Information

MELANOMA

Melanoma is a tumor that arises from pigment-producing cells called melanocytes or melanoblasts. Melanoma generally occurs as a local growth, which is easily excised in majority of cases. In a minority of cases, spread to distant sites is a significant problem.

Canine Melanoma

Melanoma is one of the most common oral cancers in canines. Its malignant potential is very site-specific, with mostly benign cutaneous lesions and mostly malignant sites in the oral cavity, digits, and ocular areas. Melanoma can appear as a pigmented or non-pigmented lesion.
Melanoma can sometimes present a diagnostic challenge to pathologists if the tumor contains no melanin, and it can be confused with other disease processes, such as an undifferentiated or anaplastic sarcoma or an epithelial tumor. Because diagnosing melanoma can be difficult, investigations into molecular approaches are underway. Studies involving the immune response to melanoma with FasL DNA with intratumor injections prime the peripheral mononuclear cells to enhance lymphokine-activated killing of tumor cells (therapeutic gene delivery). Xenogeneic DNA vaccination studies encoding genes for tyrosinase family members can induce antibodies and cytotoxic T-cell responses, resulting in melanoma tumor rejection.

Metastasis

Metastasis of melanoma occurs most commonly to the regional lymph nodes and then second most commonly to the lung. The metastatic rate is known to be site-, size-, and grade-dependent. Metastasis tends to be seen in older patients. Therapy is usually multi-modal in its approach. Surgery can give good local control with lesions less than two centimeters in size and in an area amenable to surgery. Canines with tumors less than two centimeters in size have a longer median survival then those with lesions larger than two centimeters. However, approximately 25% of canines with oral melanomas will survive one year. In a study of canines with small lesions, those receiving immunotherapy (liposome muramyl tripeptide) and surgery survived longer than those treated with surgery alone. Radiation therapy in a coarse fractionation scheme has been used alone and in conjunction with chemotherapy. The most common chemotherapy agent used has been carboplatin. Oral melanoma is considered a highly metastatic disease that is treatable but incurable.

Comparative Oncology

Canine oral melanoma can be compared to human cutaneous melanoma with regard to its disease progression, metastatic pattern, and available treatment schemes. Local control of melanoma can be achieved by surgery in a high percentage of canines and humans. As can be seen with this disease process, metastasis to various places is the primary cause of failure. It is known that chemotherapy offers some, but not complete, control. Therefore, the continued identification of new melanoma antigens and the development of more immunotherapy agents will be in the forefront of melanoma treatment.

Comparative studies include:

Walsh P, Gonzalez R, Dow S, et al. A phase I study using direct combination DNA injections for the immunotherapy of metastatic melanoma. University of Colorado Cancer Center Clinical Trial. Human Gene Ther. 2000 Jun 10; 11(9): 1355-68.