

## CANINE MELANOMA

Melanoma is a cancer of the cells in the body which produce hair and skin pigment. These cells are called melanocytes. Melanoma can occur on the skin, in the mouth, in the nail bed and in the eye. Melanoma in the mouth (oral melanoma) and melanoma in the nail bed (subungual melanoma) are unfortunately malignant diseases in dogs. This means that as well as producing a growth at the initial site, the cancer cells tend to spread elsewhere in the body. The most common places for oral melanoma to spread are the regional lymph nodes (glands) within the head and neck, and the lungs. Nail bed melanoma can also spread to the lymph nodes draining that leg which can be the lymph nodes in front of the shoulder (prescapular) and the lymph nodes behind the knee (popliteal). Tumours in the mouth can often grow to be very large before they are even detected by an owner or veterinarian, and also often invade deeply into the surrounding bone. Commonly noticed signs will be bad breath (halitosis), bleeding from the mouth, or difficulty eating. Certain breeds are more likely to develop melanoma e.g. poodles, dachshunds, Scottish terriers and Golden retrievers

### **Clinical stages of canine oral melanoma**

Clinicians use the term ‘staging’ to determine how advanced a cancer is. These staging categories are defined differently for all types of tumours and shown below is the staging system for malignant melanoma in dogs.

- Stage I tumour < 2cm diameter, no spread to the lymph nodes (glands)
- Stage II tumour: 2 to 4 cm diameter, no spread to lymph nodes (glands).
- Stage III tumour: >4 cm and/or spread to lymph nodes.
- Stage IV tumour: any size with distant metastatic disease (spread) to other organs

### **Survival times:**

Survival times are estimated from publications in the literature and are *median survival times*. This means that some dogs will have a shorter time and some longer, than the estimated time given here. The survival times shown are those without any further treatment, so if you have decided to have treatment for your pet’s melanoma, then these times will be longer and we would be able to advise you on the difference.

- Stage I: approximately one year
- Stage II: approximately 6 months (with surgery)
- Stage III: approximately 3 months (with surgery)
- Stage IV: approximately 1 month

### **Treatment**

Surgical removal of the tumour is the treatment of choice, but this is not always possible if the tumour is large, has invaded into other structures, or has already spread. When the tumor cannot be completely removed and/or it has spread to local lymph nodes (but not beyond), then radiation therapy can be added to treatment. Response rates with radiation therapy are up to 70% in some studies. However, recurrence of disease or more distant spread can still occur following this type of therapy, and survival times rarely exceed 5-7 months.

It would seem logical that chemotherapy (drugs given orally or into the vein) would be an effective form of treatment for cases of oral melanoma that have spread to distant sites like the lungs since these drugs are able to be carried all over the body via the circulatory system. Unfortunately, melanoma seems to be naturally resistant to chemotherapeutic drugs, and response rates and durations of response are disappointing. Chemotherapy has not been shown to give survival benefit for dogs that had been treated with aggressive surgery and/or radiation therapy.

### **The Melanoma Vaccine**

Recent technological advances have allowed the development of a vaccine for canine oral melanoma. This form of treatment is called immunotherapy and is based upon the concept of stimulating the body's own immune system (that normally fights infection) to recognise one of the proteins on the cancerous melanocytes as a 'foreign protein'. This leads the body's immune system to target that cell for destruction (just like it normally would with bacteria or viruses) and in this way the body controls the growth of the tumor cells.

When used in conjunction with surgery and/or radiation therapy, the vaccine has been shown to significantly prolong the survival time for dogs with advanced stages of melanoma. Historically dogs with stage II or stage III oral melanoma have reported survival times of less than five to six months when treated with surgery alone. In recent research, dogs treated with the vaccine following surgery showed significantly better survival times. In fact, six months after the conclusion of the study, more than 50% of dogs treated with the vaccine were still alive.

Treatment involves a course of one vaccination every two weeks up to a total of 4 vaccinations. Booster vaccination is then required once every six months. There are no known contraindications for using the vaccine in dogs with oral melanoma. It is administered into the inner thigh muscle of the dog with a needle-free transdermal device. It is not painful and the dog does not need sedation or anaesthesia for the injection. Each time dogs receive a dose, their immune response becomes stronger in the fight against melanoma.

**COST:** The vaccine is supplied from the manufacturer as a box of 4 vaccines. The box has to be ordered especially for each individual patient who will receive it – i.e. it is not just stored as a matter of course. For this reason, payment is required at the time that the vaccine is ordered. As the vaccine belongs solely to the dog for which it has been ordered it cannot be used for any other patient, even if for any reason the vaccine is no longer required.