

## **Malignant Melanoma**

A melanoma is a tumour of melanocytes, a type of cell found anywhere in the body that produces and stores melanin or pigment. Melanomas are commonly diagnosed in dogs but are rare in cats. They are usually found inside the mouth (oral), on the skin (cutaneous) and within the toe (digital). They can also be found within the eye, usually in cats. This type of cancer is more common in middle aged to older dogs. Melanomas of the skin are seen more often in dogs with pigmented skin. Some dog breeds such as Dobermans, Schnauzers, Labrador Retrievers and Rottweilers appear to be at greater risk of developing melanomas.

Melanomas can exhibit variable behaviour ranging from benign (unable to metastasise or spread to other areas of the body) to malignant (has the ability to metastasise) highly aggressive behaviour. While the majority of skin melanomas are benign (> 85%), the majority of oral and ~ 50% of digital melanomas are malignant. The behaviour of melanoma in cats is very unpredictable. In humans, melanomas have been associated with exposure to sunlight; however, this has not been shown to be a cause in animals with melanoma.

### ***Clinical signs***

Melanomas of the skin or oral cavity usually appear as a dark, raised lump. Occasionally melanomas do not contain pigment and are therefore not dark in colour (“amelanotic melanoma”). These can be more difficult to diagnose and are more often found in the mouth.

Oral melanomas can lead to excessive salivation or drooling, difficulty eating, bleeding from the mouth and bad breath. Melanomas of the digit can cause lameness, swelling of the toe and loosening of the toenail.

### ***Diagnostic tests***

Most commonly a diagnosis is obtained by taking a biopsy from the lump. A fine needle aspirate may be suggestive of this cancer, however a biopsy is required to assess the malignant potential and likely behaviour of the tumour. This includes the rate at which the tumour cells are turning over, and this is called the mitotic index. This, along with other factors, is important to help predict how the tumour will behave, particularly in dogs, which influences treatment and prognosis. For example, a mitotic index of less than 3 is strongly associated with benign behaviour, whereas greater than this value is generally associated with malignant behaviour.

Malignant melanomas have a high chance of spreading (‘metastasising’), in particular to the lungs and lymph nodes. Once a diagnosis has been made further tests (staging) are recommended to screen for metastases. These often include chest x-rays (or CT scan), fine needle aspiration and/or biopsy of regional lymph nodes and an abdominal ultrasound or CT. Sometimes additional imaging of the tumour (MRI or CT) is necessary to plan treatment. The team at AVC will discuss staging tests further with you, specific to your own pets’ melanoma. Blood tests (a complete blood count and biochemistry panel) and urinalysis are also performed to establish the general health of your pet prior to treatment.

### ***Treatment***

Treatment options include surgery, radiation therapy, chemotherapy and immunotherapy.

Melanomas in dogs with benign criteria have an excellent prognosis after complete surgical resection, particularly when located on the skin. Conversely, many dogs with malignant melanoma at oral and digital sites will develop problems related to tumour recurrence or metastasis in the future, if they have not already. For this reason, the team at AVC will discuss both local and systemic (i.e. whole body) treatments with you. Local treatments include surgery and radiation therapy.

In general **surgery** is preferred if the tumour is in a location that allows a wide resection to be performed. For melanomas of the digit, a toe amputation is usually required. For oral melanomas, often part of the jaw is removed.

**Radiation** therapy can also be used to treat melanoma, particularly if surgery is declined or not possible. This involves local application of radiation directed as a beam onto the tumour and surrounding area. This may shrink melanomas or delay or prevent local tumour regrowth. It does not treat metastatic disease. Access to radiation therapy in Victoria is limited and the type that may be most suitable for your pet (megavoltage) is only available in Sydney or Brisbane.

Systemic treatments include **chemotherapy** or **immunotherapy**. Chemotherapy involves intravenous treatments given every 3 weeks; typically for 4-6 treatments. This may be helpful in slowing local progression and metastasis. It is generally well tolerated in animals. Please see 'Chemotherapy in animals' handout. Immunotherapy involves giving a vaccine into the muscle every 2 weeks for 4 treatments, then every 6 months thereafter as a booster. Studies have shown it is safe; and suggest improvement in survival times over historical controls. It is not currently available in Australia, however AVC can arrange importation from the USA if this treatment is relevant for your pet. It can only be imported for patients that have had their tumours treated with surgery or radiation therapy first. Finally, we can consider targeted therapy for melanoma in dogs and cats, however studies assessing efficacy have not yet been performed. Anecdotally, however, we have seen some responses with this approach, in particular for patients in which other treatments are not effective.

There is less information available regarding treatment of melanoma in cats, however the same principles apply as for the dog. The exceptions are that the melanoma vaccine is considered off-label for cats; and predicting behaviour of the tumour is more difficult in cats.

### ***Prognosis***

The prognosis for melanoma depends on several factors: if the melanoma is benign or malignant; if metastases are present, the location at which the tumour is found and the size of the tumour. Small, non-ulcerated tumours located on haired skin tend to be associated with the best prognosis and most cutaneous melanomas are cured with surgery. Melanomas of the digit are associated with more aggressive behaviour than their cutaneous counterparts, with 1- and 2-year survival rates at 42-44% and 11-13% respectively. Oral melanomas are generally associated with more aggressive behaviour; and this has been shown to be related to the tumours size and location.

The behaviour of melanoma in cats is much less predictable and even those assigned a benign status on a biopsy can behave aggressively and metastasise. Ocular melanomas (of the eye) tend to behave very aggressively in the cat, whilst they can be quite benign in the dog.

### ***Follow up***

Following the completion of therapy, we recommend periodic rechecks to screen for recurrence or metastasis. This will be tailored to each patient, depending on their response to treatment and their individual situation. Typically, we prefer a revisit examination in 1 month and then every 3 months afterwards. Early detection of recurrence or metastases is beneficial as it allows prompt management or treatment.