

## INFORMATION SHEET (ONCOLOGY)

### FELINE SQUAMOUS CELL CARCINOMA

Squamous cell carcinoma is a common malignant tumour of squamous cells, which are located in the surface of the skin and the passages of the respiratory and digestive tracts. Squamous cell carcinoma commonly arises from hairless non-pigmented skin and is associated with exposure to ultraviolet light (sunshine). The most common locations for these tumours in cats are the tip of the nose (nasal planum), ears (pinnae) and eyelids. This is a common problem for white faced cats in Australia where there is a lot of sunshine.

#### **Clinical signs**

Squamous cell carcinoma may present as either an erosive or proliferative lesion. The erosive form is the most common in cats and initially starts as a crusting lesion that progresses to an ulcerative crater. The proliferative form may be a cauliflower-like growth or a more solid plaque. Early symptoms of the disease can be subtle, such as a minor irritation or a scab on the head, ears, or nose. As the cancer progresses there is obvious redness, irritation, scabs, ulcers and hair loss. These symptoms may mimic other diseases; especially skin conditions caused by ringworm, allergies and sarcoptic mange and in the early stages even a scratch.

#### **Diagnosis and Staging**

Diagnosis of squamous cell carcinoma involves either a fine needle aspirate or biopsy of the mass or area. A fine needle aspirate is a simple test done with a small needle and syringe collecting a small number of cells. A biopsy is a slightly more invasive procedure and involves taking a larger sample. It is more likely to provide a diagnosis and often requires heavy sedation or general anaesthesia for lesions of the face. An incisional biopsy involves taking a small sample of tissue from within the tumour. This is generally recommended for squamous cell carcinoma as they are locally invasive and it is important to take wide margins of normal tissue when attempting to remove the entire tumour (see treatment). An excisional biopsy involves removing the entire tumour and requires a general anaesthesia. This could be considered for very small tumours, particularly if the diagnosis is suspected or likely after fine needle aspiration. Once the diagnosis of squamous cell carcinoma is made the patient is assessed to establish how far the disease extends locally, and if there is evidence of cancer spread to other areas of the body (metastases), the latter is called staging. Generally squamous cell carcinomas involving the face are very locally invasive but infrequently metastasise and tend to do so late in the disease. Staging for squamous cell carcinoma may include palpation and fine needle aspiration (as described above) of local lymph nodes, chest radiographs and occasionally an abdominal ultrasound. Blood tests (a complete blood count and

biochemistry) and urinalysis are also performed to establish the general health of the patient and organ function prior to treatment. Assessing the extent of local disease may involve imaging of the affected area. Radiographs may show involvement of bone with the cancer but are not accurate for soft tissue involvement. Direct visualisation and palpation can be misleading and we may recommend an MRI or CT scan. This can detect both bony and soft tissue involvement of the cancer and helps us to plan surgery. This increases the likelihood of removing the entire tumour.

#### **Treatment**

**Surgery** is the treatment of choice for squamous cell carcinoma as these tumours are more locally invasive than they are metastatic. This involves removing the tumour with a wide margin of normal tissue both around it and underneath it to increase the likelihood of removing the entire tumour. Sometimes tumour cells can be left behind after surgery for two main reasons: these tumours can be very locally invasive and even when large margins are taken it is possible that some tumour cells may remain; secondly the face can be a difficult area to operate and it is not always possible to achieve the required margins. Surgery may result in a cosmetically displeasing look or involve removing an organ (for example the eye, the front of the nose or the entire ear). This emphasises the need for early diagnosis and proper planning before surgery (with a biopsy and MRI/CT scan if indicated). A pathologist will endeavour to determine whether the entire tumour was removed. If the cancer is on the ear then a partial or complete amputation of the ear is performed. It is important to remove a significant amount of the ear because recurrence is common if the amputation is incomplete. If there are tumour cells remaining additional treatments are sometimes necessary which may include: further surgery, chemotherapy, or radiation. The first attempt at surgery has the greatest chance of a successful outcome and this is why it is important to perform all necessary pre-surgical planning tests and to take wide margins of normal tissue around the cancer.

**Radiation** therapy can also be used to treat squamous cell carcinomas. This can be used as the primary treatment or as an adjunct to surgery (for example if there is residual cancer left after surgery). External beam radiation can also be used to treat these cancers and has some success in the management of squamous cell carcinoma of the nose. It can be used to treat deeper or more extensive lesions than cannot be treated with surgery. There is some concern about toxicities in the area following radiation, in particular inflammation in the mouth leading to a decreased appetite. Radiation is a local treatment only and does not treat metastatic disease. It must be combined with chemotherapy to treat disease elsewhere in the body if there is evidence of metastases.

**Chemotherapy** can be used as an adjunct to surgery or radiation and is the treatment of choice if there is evidence of metastases on staging tests, if there is residual tumour left after surgery or if the cancer is high grade or aggressive. Unfortunately, squamous

cell carcinomas are often poorly responsive to chemotherapy. The chemotherapy drugs we commonly use for this cancer is gemcitabine and carboplatin. Chemotherapy is generally well tolerated in animals, for more information please see the 'Chemotherapy in animals' information sheet.

**Cryosurgery** is the application of extreme cold to destroy abnormal or diseased tissue. This could be considered for very small, or pre-cancerous lesions. Liquid Nitrogen or nitrous oxide is used to freeze the tissues at the cellular level. The procedure is performed under general anaesthesia and is generally well tolerated but has a moderate to high recurrence rate. Palliative treatment with a non steroidal anti-inflammatory such as piroxicam) or meloxicam could be considered for larger inoperable tumours. These can have some anti-cancer properties and may limit progression of the disease for a short time (months) but this is usually short lived.

A vitamin A-related synthetic retinoid has also been used in cats with solar (ultraviolet light) induced squamous cell carcinomas of the skin. It appears to be most effective when used on pre-cancerous lesions or in combination with traditional therapies.

### **Prognosis**

Early detection of squamous cell carcinoma followed by complete excision improves the prognosis. More than 80% of cats with squamous cell carcinoma of the nasal planum treated with surgery (complete excision) are free of cancer after one year. However, with larger more invasive tumours and in cases in which complete removal of the tumour is not possible, recurrence of the tumour is common. Often the aim in these patients is to control the disease rather than cure it. Prevention is the best treatment, but this requires avoidance of sun exposure in susceptible animals throughout their life.

### **Follow up**

Following the completion of chemotherapy we recommend periodic rechecks to screen for recurrence or metastasis. These are typically recommended one month after finishing chemotherapy and then every three months thereafter. Early detection of recurrence or metastases is often beneficial and allows prompt management or treatment. The most effective preventative measure for squamous cell carcinoma is prevention of exposure to sunlight. Topical sunscreen may help but is often licked off and tattooing places ink into the deeper layers of the skin (dermis) and does not protect the superficial layer (epidermis), hence it is not recommended.

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