

Decision Making in Feline Cancer Patients

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Introduction

This short presentation will describe approaches to these diseases, standard treatment protocols and advances in radiation and chemotherapy-based treatments. Particular emphasis will be placed upon the special considerations in cats with regards drug metabolism, nutritional support during therapy and prognosis of individual diseases.

Feline Lymphoma

Diagnosis and Staging

The various anatomical forms of feline lymphoma (mediastinal, alimentary, renal, multicentric and extranodal) have been well described.

Alimentary--characterised by gastric, intestinal, or mesenteric lymph node involvement, this is one of the more common forms of feline lymphoma. Gastrointestinal lymphoma may present as a solitary mass lesion or as a diffuse infiltration of extensive areas of bowel. Clinical signs are non-specific, including anorexia, vomiting, and diarrhoea. Animals previously diagnosed with lymphoplasmacytic gastroenteritis have been reported subsequently to develop gastrointestinal lymphoma. Most cats with alimentary lymphoma are FeLV ELISA negative.

Mediastinal--most cats with mediastinal lymphoma are relatively young and FeLV ELISA positive. Typical clinical signs include dyspnoea and exercise intolerance due to the presence of the space-occupying lesion and pleural effusion. Coughing may occur secondary to compression of the trachea by the large mediastinal mass. The heart sounds may be muffled and caudally displaced. It is often abnormally difficult to 'spring the ribs' of the cranial thorax of affected young cats.

Multicentric--unlike the situation in dogs, this is a relatively uncommon form of feline lymphoma. It must be distinguished from various forms of generalised reactive lymphadenopathy, including some forms that occur in retrovirally-infected cats. Fine needle aspiration can sometimes provide a definitive diagnosis, but cutting needle biopsy or excisional biopsy may be necessary.

Extranodal--the extranodal form includes all lymphomas that do not fall into any of the preceding categories and accounts for approximately 5% of lymphoma in cats. Ocular, neural, renal, and cardiac forms are the most common sites of involvement.

Treatment and Prognosis

In most parts of the world, lymphoma is by far the most common feline malignancy and there have been numerous reports on treatment and prognostic factors. Lymphoma should be regarded as a systemic disease, and in almost all forms of the disease chemotherapy is appropriate; either alone or as an adjunct to surgery and/or radiotherapy. Numerous treatment protocols have been described for

feline lymphoma. **Most use vincristine, cyclophosphamide and prednisolone as the core drugs. Doxorubicin is also an important, effective drug.**

The prognosis for cats with lymphoma is reported to vary according to anatomical form of disease, FeLV status, presence or absence of azotaemia, presence of peripheral blood cytopenias, and chemotherapeutic protocol used. FeLV negative cats that achieve a complete remission following induction therapy are likely to have durable (i.e., > 6 month) responses, particularly when doxorubicin was included in the chemotherapy protocol. However, FeLV positive cats have significantly shorter remissions and survival times when treated with available chemotherapeutic protocols.

The overall response rate in cats is somewhat poorer than in dogs. Intriguingly, prognosis may also be changing over time. The protocol to which most others have been compared is COP. Currently, for most feline lymphoma cases the 25 week Madison-Wisconsin protocol appears to give the longest duration of remission. This is a finite protocol that does not include maintenance therapy. The exception is small cell lymphoma of the GI tract. This is treated continuously with a protocol including every other day prednisone, and chlorambucil given at 20 mg/m² every two weeks.

Feline Squamous Cell Carcinoma

This is a common skin tumour that accounts for approximately 15% of cutaneous tumours in the cat. They are usually located on non-pigmented skin and in areas that are not covered with hair. In many instances there is a recognized solar exposure relationship and these tumours are often referred to as 'actinic' SCC.

Presentation

In the cat, lesions occur most commonly on the head including the nasal planum, eyelids, temporal region, and pinnae. Multiple lesions are present in 30% of cats. There is typically a progression of lesions from actinic keratosis to squamous cell carcinoma in situ to squamous cell carcinoma.

Squamous cell carcinoma can present as a proliferative or ulcerative/erosive lesion. The proliferative lesions vary in their appearance with some forming red firm plaques or cauliflower appearance that may ulcerate. The erosive lesion most commonly seen in the cat initially starts as a shallow crust that may develop into a deep ulcer.

Early lesions most notably in cats appear to be small pinpoint scabs that may even heal then recur. Tumours can be locally invasive but are late to metastasize. The degree of invasion can be quite severe and response to therapy is usually better with early lesions (Tis to T1).

Surgery and Cryosurgery

Remains the treatment of choice although there are numerous reports using other modalities. In the cat, lesions of the pinnae are more manageable than the nasal planum due to location (i.e., more aggressive surgery can be performed). Wide surgical excision of other sites is also recommended but again, prognosis and the chance of recurrence are dependent on the tumour stage.

Chemotherapy

Chemotherapy has shown little consistent efficacy in the veterinary literature. Agents that have been

used include mitoxantrone, actinomycin D.

Radiation

Cats with actinic keratosis, carcinoma in situ and early SCC lesions less than 2 mm in depth respond well to plesiotherapy (form of superficial radiotherapy). In a group of 25 cats treated with a single, high dose utilizing strontium-90, 90% were free of tumour 1 year following therapy. The mean disease-free interval was 34 months. For cats with more advanced lesions, external beam radiation is recommended.

Photodynamic Therapy

If applied to early lesions, results are generally positive.

Feline Mast Cell Disease

Splenic Mast Cell Tumours

MCT primary to the spleen in cats is most common in older non purebred cats. Signs include nonspecific illness or chronic vomiting due to histamine release causing gastroduodenal ulceration. Liver, lymph nodes and bone marrow are also commonly affected. Staging includes a CBC, biochemical profile, urinalysis, FeLV, FIV, thoracic radiographs, abdominal ultrasonography and bone marrow aspirate. Fine needle aspiration cytology or biopsy of spleen is indicated. The diagnosis is sometimes made from ascitic fluid or blood smear.

As initial treatment, splenectomy normalizes other disease within 5 weeks. The median survival is 12 months. As adjunctive therapy, the use of corticosteroids is controversial. Chemotherapy (CCNU, vinblastine) has not been reported. Supportive therapy consists of preoperative H1 and H2 antihistamines to reduce risk of gastrointestinal damage and shock especially during surgery. The same drugs may be palliative for clinical signs but results are variable.

Intestinal Mast Cell Tumours

Intestinal MCT are most common in small intestine, causing vomiting, inappetence and weight loss. Staging is the same as splenic MCTs. Metastasis is very common. Prognosis is poor. Initial treatment consists of wide surgical excision including 5-10 cm of normal bowel. Adjunctive therapy has not been described, but consider chemotherapy with prednisone or CCNU.

Cutaneous Mast Cell Tumours

Cutaneous MCTs are common in all age cats; and Siamese are predisposed. Tumours are usually solitary but can be multiple and may often be hairless and firm. Tumours occur most commonly on the head and neck. Cutaneous MCTs in cats need to be differentiated from eosinophilic granuloma. Systemic involvement is rare. Staging includes a CBC, biochemical profile, urinalysis, FeLV, FIV and excisional biopsy for solitary lesions. Histologic grading does not predict clinical behavior. If multiple lesions are present, thoracic radiographs, abdominal ultrasonography, buffy coat smear and bone marrow aspirate are necessary to rule out systemic disease.

Surgical excision is usually curative but new lesions may arise. Spontaneous regression has been reported in Siamese cats with histiocytic MCTs. Adjunctive therapy for incompletely excised tumours

consists of radiation therapy. Corticosteroids are probably not effective. Other chemotherapy has not been reported but vinblastine or CCNU could potentially be useful.

Vaccine-Associated Sarcoma

Vaccine-associated sarcoma in cats is a complex disease with a poorly understood pathogenesis.

Decision Making: Vaccination

The epidemiological evidence puts vaccination as an inciting cause for this disease. Consequently, recommendations are now in place to promote prevention of the disease, or at least early detection. These include:

Avoiding the interscapular space

Subcutaneous rather than intramuscular vaccination (early detection)

Rabies/FeLV vaccine on the distal limb

Other vaccines on the distal shoulder

Decision Making: Post Vaccination Lumps

Some Rabies and FeLV vaccinations will produce post-vaccination lumps in nearly 100% of cats vaccinated. Most of these will resolve over a 2-3 month period, and most vaccine-associated sarcomas will not occur prior to 3 months following vaccination. Consequently it is recommended that all post-vaccination lumps be removed if still present at 3 months (or if they grow beyond 2 cm, before 3 months). Surgical biopsy is recommended prior to definitive removal.

Decision Making: Vaccine-Associated Sarcoma

Once a vaccine-associated tumour develops, management and control can be difficult. Below is a summary of appropriate steps:

Pre-surgical biopsy is highly recommended

Complete staging:

Blood count and chemistry

Urinalysis

Thoracic radiography

MRI or contrast CT is highly recommended for accurate surgical assessment of the extent of disease

Single surgical excision, even with wide margins, is rarely curative for vaccine-associated sarcoma. Local recurrence is common and a second surgery is always difficult. However, for lesions on limbs, amputation would appear to have a higher success rate than single surgeries for VAS in alternative sites. Radiotherapy has been shown to improve on surgery alone. Two options are available:

1. Pre-operative radiotherapy: (has been shown to give local control to 23 months)
2. Post-operative radiotherapy (control to 12 months in 1 study)

The author's standard protocol is to pre-operatively treat cats to 48 Gy using cobalt 60. For cats with tumours that overlie vital organs such as kidney, we recommend treatment with electrons using a linear accelerator. The advantage of pre-surgical radiation is that the radiation field is much smaller and easier managed. Following radiation surgical excision is performed and margins examined for completeness of resection. At surgical excision margins are tagged and/ or dyed with Indian ink.

The Role of Chemotherapy

For animals who do not undergo radiation, or whose margins are in doubt after radical surgery, or who have metastatic disease, chemotherapy may be offered as an adjunct. For patients that have had wide surgical excision following radiation, the addition of chemotherapy would appear to have little benefit. For cats that do not have radiation but have surgery alone (with curative intent), the addition of chemotherapy would appear to improve the time taken for recurrence. **Drugs that have been used include Adriamycin (doxorubicin), carboplatin, Doxil (liposome encapsulated doxorubicin). There is no benefit of Doxil over doxorubicin.**

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