The Pet Oncologist

How to approach a cat with a gastrointestinal mass

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Introduction

As a veterinarian, you will be presented with a cat with a gastrointestinal mass. These notes will discuss the cancer biology, prognosis, diagnostics, and treatment options for the three most common gastrointestinal cancers in cats (lymphoma, adenocarcinoma and mast cell tumours). Other diseases (such as adenomatous polyps), and less common gastrointestinal cancers (such as carcinoids, sarcomas and plasma cell tumours), can also occur in cats. It is important to recognise these types of cancers. However, discussion of these diseases and less common gastrointestinal cancers is beyond the scope of these notes.

Lymphoma

Lymphoma is the most common haematopoietic cancer in cats. Lymphoma usually arises in lymphoid tissues such as the lymph nodes, spleen, and bone marrow. However, lymphoma may arise in any tissue of the body.

Lymphoma is the most common primary gastrointestinal cancer in cats. Gastrointestinal lymphoma can be confined to the intestinal or gastric location, or a combination of intestinal, mesenteric lymph node, and hepatosplenic involvement. These tumours may be solitary, but more commonly are diffuse throughout the intestines.

Cats with gastrointestinal lymphoma typically present with a palpable abdominal mass and non-specific clinical signs of vomiting, diarrhoea, inappetence or weight loss.

The median age of affected cats is approximately 10 to 13 years of age. However, lymphoma may occur in cats of any age. Oriental breeds (such as Siamese breed) are predisposed. However, most cases occur in domestic shorthair (DSH) cats. Males appear slightly more frequently affected than females (1.1-1.5:1 male-to-female ratio).

The prognosis for lymphoma in cats is highly variable and depends on several factors. Unfavourable prognostic factors include not achieving complete remission with therapy,[1-3] high histologic grade, large-cell morphology,[4] positive FeLV status,[1] clinical substage b[1,5,6] (particularly weight loss and anaemia at presentation), transmural gastrointestinal lymphoma,[4] not receiving doxorubicin in a treatment protocol,[1,7] possibly pre-treatment steroids,[2] and probably T-cell immunophenotype for cats with high-grade or large-cell lymphoma.

Overall there are many prognostic factors associated with lymphoma in cats. However, the single most important independent prognostic factor is achieving complete remission with therapy. The response to therapy will not be known until therapy is trialled.

Diagnosis is usually confirmed by cytology or histopathology of the gastrointestinal mass. B- and T-cell immunophenotyping, flow cytometry, and PARR (PCR for Antigen Receptor Rearrangement) are special tests sometimes required to confirm lymphoma. Three-view thoracic radiographs and abdominal ultrasonogram are recommended to determine if there are other sites of lymphoma and to help monitor responses to therapy. Haematology (including blood film review), serum biochemistry and routine urinalysis are a minimum database, recommended in all cats with lymphoma, particularly before starting chemotherapy, to assess the cat's general health and determine if there are any co-morbidities. Renal and hepatic function is crucial to assess before chemotherapy because if there are any abnormalities, chemotherapy may be contraindicated. The results of these tests will allow veterinarians to develop individualised treatment recommendations for each cat. Feline leukaemia virus (FeLV) and feline immunodeficiency virus (FIV) retroviral testing are also recommended. FeLV-positive cats are associated with a worse prognosis and are more likely to have systemic involvement. FIV-positive cats anecdotally have been associated with a higher risk of myelosuppression (particularly neutropenia) with chemotherapy.

The prognosis for untreated high-grade lymphoma in cats is guarded, with a median survival time of approximately two months or less. Most cats are humanely euthanised due to poor quality of life.

The treatment of choice is multiple-agent chemotherapy. The reported complete remission rate and median survival times with multiple-agent chemotherapy are approximately 50-70%, for approximately 4 to 12 months, respectively. Some cats are cured, living up to 2.5 years or longer. However, this is less likely (although not impossible) with gastrointestinal lymphoma. Also, cats that achieve a complete remission with chemotherapy have reported median survival times between 8 months and 1.5 years, compared to 2 to 3 months in cats that do not achieve a complete remission (i.e. cats that achieved partial remission, stable disease or progressive disease). Single-agent lomustine (CCNU) is also a reasonable option. A recent retrospective study evaluated 32 cats with treatment naïve intermediate to large-cell gastrointestinal lymphoma treated with single-agent CCNU.[8] Some cats received a single dose of l-asparaginase with the first CCNU treatment. The response rate (i.e. complete and partial remission) to CCNU was approximately 50%. Most cats had a clinical benefit from treatment. However, 30% of cats did not respond to therapy. The median survival time for all cats in this study was 3.5 months. However, if cats achieved complete remission with CCNU, the median survival time increased to 10 months.

What if the gastrointestinal mass is solitary? In these cases, surgery followed by chemotherapy or chemotherapy alone is recommended. Surgery alone is not recommended. Which cats do I take to surgery? I recommend surgery in cats with discrete/solitary gastrointestinal mass, when gastrointestinal perforation is suspected/confirmed, or there is a high risk of gastrointestinal perforation. However, before considering surgery, I strongly recommend thorough staging to ensure there is no evidence of lymphoma present elsewhere.

Is there a survival advantage with surgery and chemotherapy, over chemotherapy alone? This is a challenging question. In one study of 20 cats with high-grade discrete gastrointestinal lymphoma undergoing surgery followed by CHOP chemotherapy, the median survival time was 14 months.[9] In another study evaluating 40 cats with discrete intermediate- or large-cell gastrointestinal lymphoma undergoing surgery ± chemotherapy, the overall median survival time was three months.[10] The median survival time of cats with small intestinal lymphoma was two months. Whilst the latter study showed no survival benefit with the addition of chemotherapy after surgery, only 25% of cats that underwent surgery received chemotherapy. The median survival time in cats with complete histologic margins was seven months, compared to 2.5 months in cats with incomplete histologic margins. Based on these two studies, the median survival times with surgery followed by chemotherapy was three months and 14 months. Chemotherapy alone is associated with a median survival time of between 4 and 12 months. Therefore, at this stage, it is uncertain whether the addition of surgery provides cats with a survival advantage over chemotherapy alone.

In one study of 23 cats with discrete intermediate- or large-cell gastrointestinal lymphoma, the risk of gastrointestinal perforation appears to be low at 17%, between 23 and 87 days after the induction of chemotherapy.[11] The magnitude of weight loss within 2 to 4 weeks of chemotherapy was greater in cats with perforation.

For cats with small-cell or low-grade alimentary lymphoma (LGAL), the gold standard treatment involves oral administration of chlorambucil and prednisolone indefinitely, which cat owners can administer from home. The prognosis is excellent, with an overall response rate of 85-95% and reported median survival times of around 1.5-3 years. Occasionally, cats will not respond to therapy or transform into large-cell or high-grade lymphoma or develop a second malignancy. These cats have a worse prognosis.[12-14]

It can be challenging to distinguish LGAL from inflammatory bowel disease (IBD). Cats with both LGAL and IBD can both present with diffusely thickened small intestines, a segmental/focal gastrointestinal mass, with or without lymphadenopathy. The most common sonographic feature of LGAL is diffuse thickening of the muscularis propria of the small intestines. In general, LGAL has more pronounced thickening of the muscularis propria, when compared to the submucosa.[15,16] Full thickness intestinal biopsies are recommended. PARR can sometimes be helpful in distinguishing between LGAL and IBD. However, PARR only has an accuracy of 77% in determining if cats have LGAL.[17]

Gastrointestinal adenocarcinoma

Carcinoma is the second most common gastrointestinal tumour in cats. The small intestines (particularly ileum) are the most common site. Older cats (mean age of 10 to 12 years) are primarily affected. Males appear slightly more frequently affected than females. Siamese cats and domestic short-haired cats may be overrepresented.

Cats usually present with a palpable abdominal mass and non-specific clinical signs such as anorexia, vomiting, weight loss, lethargy, diarrhoea, melaena, and abdominal pain. Generally, the clinical signs are not distinguishable from other benign or malignant

conditions, and consequently, the disease is often insidious in onset. Most cats present with clinical signs for one to three months before a diagnosis of small intestinal carcinoma is made. Some cats present with partial or complete obstruction.

Intestinal carcinomas are locally invasive and highly metastatic, with around 76% having distant metastasis at the time of presentation. Around half of cats have metastasis to regional lymph nodes, 30-81% to the peritoneal cavity (carcinomatosis), and 9-20% to the lungs. Intestinal carcinomas are often advanced at the time of diagnosis.

The prognosis for untreated cats is poor, with most cats humanely euthanised within two weeks from poor quality of life. Positive prognostic factors include cats that present with a solitary mass and surgery to achieve complete histologic margins. Negative prognostic factors include the presence of metastasis or carcinomatosis and unresectable tumours. Cats with evidence of nodal or distant metastasis usually have a survival time of less than a few months, compared to more than one year in cats without evidence of metastasis.[18] However, long-term survival can be seen in cats with the presence of metastasis or carcinomatosis after surgical excision of the primary tumour.

Diagnosis is similar to all cats with a gastrointestinal mass, with sampling of the primary tumour and staging to check for evidence of metastasis. Of particular importance is histopathology to remove the locoregional lymph nodes at the time of surgery. The presence of nodal metastasis is associated with a worse prognosis.

In one study of 18 cats with small intestinal carcinoma, the median survival time after intestinal resection anastomosis was one year. The median survival time in cats without metastasis was 2.3 years, compared to one year in cats with gross nodal or distant metastasis.[18] In the most recent study of 58 cats with intestinal carcinoma that was treated with surgical resection and chemotherapy in half of the cats, the median survival time just was just over nine months.[19] In that study, approximately half of cats had nodal metastasis, and 81% had carcinomatosis. Therefore, surgery is still recommended in cats with evidence of metastasis. In one study of 32 cats with small intestinal carcinoma, carcinomatosis was associated with a median survival time of 4.5 months. However, if surgery was performed, the median survival time was improved to 2.3 years.

Surgery with intestinal resection and anastomosis with wide surgical margins of 5.0-cm on either side of the tumour is recommended to achieve adequate resection of small intestinal tumours. If this is not possible, then at least 3.0-cm surgical margins are recommended. Removal of a mesenteric lymph node and biopsies of any abnormal structures is recommended for prognostic purposes.

Currently, there is no standard of chemotherapy treatment for cats with small intestinal carcinoma. In the adjuvant setting, I recommend carboplatin and/or doxorubicin.

Mast cell tumour

Feline intestinal mast cell tumour (MCT) is the third most common gastrointestinal cancer in cats. There are three distinct syndromes in cats with MCTs that may overlap, including

cutaneous, splenic/visceral, and intestinal MCT. Older cats are primarily affected (mean age of 13 years). Most cats present with non-specific signs of illness, such as vomiting, diarrhoea, hyperoxia and a solitary palpable abdominal mass. Signs are often chronic and progressive over weeks to months. Clinical signs associated with the release of mast cell mediators, such as gastrointestinal ulceration, haemorrhage and hypotensive shock, may be seen. Occasionally, cats present with no clinical signs of illness.

The most common site is the small intestines, and lesions may be solitary or multiple. Most cats (>65%) present with metastasis to the regional lymph nodes, liver and spleen.

There is also a unique histologic variant of sclerosing intestinal MCTs. However, the biologic behaviour is similar to cats with intestinal MCTs.

Diagnosis is similar to all cats that present with a gastrointestinal mass with sampling of the primary tumour and staging to check for evidence of metastasis. However, it is important to check for involvement of MCT in the locoregional lymph nodes, skin, spleen and liver. It is also important to sample any peritoneal effusions, and perform a buffy coat smear to look for peripheral mastocytosis. The most common sonographic feature of feline intestinal MCTs is focal, hypoechoic jejunal wall thickening, noncircumferential and eccentric location.[20] However, they can look like anything!

The prognosis for feline intestinal MCT is usually poor because most cats are diagnosed with metastasis and usually die or are humanely euthanised due to poor quality of life within two months of diagnosis. For cats with solitary intestinal MCTs, I usually recommend surgery followed by adjuvant chemotherapy. Surgery alone is unlikely to be successful, with most cats still dying within three months of surgery. Because most cats present with metastasis (or will go on to develop metastasis within a short period following surgery), I recommend adjuvant chemotherapy or Palladia®, alongside prednisolone following surgery.

However, in two recent studies on 48 cats with intestinal MCT, treatment with surgery and/or medical management (e.g. Palladia®, lomustine, chlorambucil, and/or prednisolone) is associated with a more favourable prognosis, with a median survival time of 1.5 years.[21] Surgery is recommended for palliation of clinical signs (e.g. gastrointestinal obstruction) or in cats that have gastrointestinal perforation (e.g. septic peritonitis).

For owners with financial constraints or do not wish for chemotherapy treatment, prednisolone concurrently with antihistamines, gastroprotectants, and serotonin antagonists is recommended. In one study of feline intestinal MCTs, six cats treated with prednisolone had a median survival time of 1.5 years.[21] However, these numbers were small. I still think surgery or Palladia® (concurrently with prednisolone) has a higher chance of working.

Vets, I hope this information helps you understand a bit more about how to approach a cat with a gastrointestinal mass. If you have a question about this topic, please do not hesitate to get in touch. Email: info@thepetoncologist.com.

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