Focus on nutritional management of feline gastrointestinal disease

Isuru Gajanayake, of Willows Veterinary Centre and Referral Service, discusses the use of nutritional therapies to manage disease in the feline gastrointestinal tract.

The nutritional management of cats with gastrointestinal disease poses a unique set of factors to consider due to the clinical presentation of cats with gut disease, and the nutritional requirements of cats.

Cats are known to have several nutritional and metabolic peculiarities that distinguish them from dogs. For example, they have a high requirement for certain amino acids (taurine and arginine) and require pre-formed vitamin A (whereas dogs can convert carotenoids to vitamin A). Similarly, there are some key differences between the anatomy and physiology of the canine and feline gastrointestinal tract. Compared to dogs, cats have a relatively shorter length of intestine. This influences the time food resides in the gut and hence the duration of digestion. Gastric emptying times in cats tend to be faster compared to dogs, which likely reflects the size of the meals eaten i.e. cats eat multiple small meals.

Gastrointestinal disease in cats can manifest as vomiting, diarrhoea, constipation, weight loss and/or inappetence. Of these signs, loss of appetite and bodyweight are common presentations (Figure 1). The nutritional management of gut disease in cats will depend on the clinical presentation, as well as the underlying pathology.

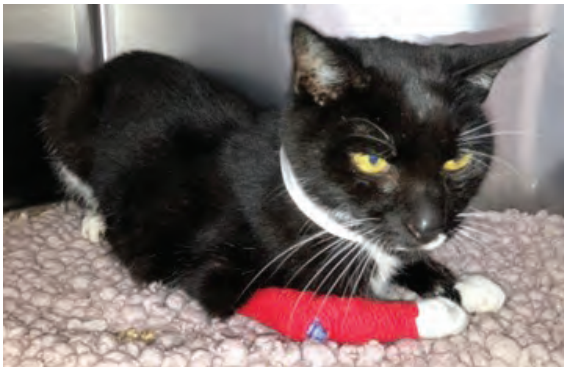

FIGURE 1: A 14-year-old Domestic Shorthair cat with weight loss and poor body condition score.

Inflammatory bowel disease

Inflammatory bowel disease (IBD) in cats can present with clinical signs such as vomiting and diarrhoea, although weight loss and a reduced appetite are much more common. Occasionally, weight loss with a normal or increased appetite may be seen. Nutritional therapy is an important part of managing feline gastrointestinal disease, with protein, fat, fibre, and micronutrients all playing roles in the management of the disease.

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The nutritional goals of managing IBD in cats are to:

- feed a balanced diet
- restore normal body condition
- correct any nutritional deficiencies
- mitigate clinical signs (e.g. vomiting, diarrhoea).

There are several diet options to consider in order to meet these goals.

Hydrolysed protein diets

There are several commercial hydrolysed protein diets available for cats, including those based on hydrolysed chicken, salmon, soya, and feather protein. These options include both dried and canned diets. Acceptance of a hydrolysed diet can be variable, especially if there is disease-associated inappetence.

Single novel protein diets

Use of a single novel protein diet is an alternative approach to managing cats with IBD. Some cats may find these diets more palatable compared to hydrolysed protein diets. Although an increasing number of commercial single protein diets are now available, studies have raised concerns about potential unlisted protein sources being present in these diets (most likely due to contamination during manufacturing), which can then lead to adverse responses.

Other diet options

Alterative nutritional strategies to manage IBD include fibre-supplemented diets, highly digestible (i.e. intestinal formulated) diets and home-cooked diets. Fibre-supplemented diets may be particularly effective where diarrhoea is a key feature of disease.

Home-cooked diets can be a useful option to manage cats with gut disease that refuse to eat commercial diets or when there are concurrent co-morbidities which also require nutritional management. Home-cooked diets would ideally be based on a single novel protein source. It is vital that home-cooked diets are formulated to be balanced for all nutrient requirements. This requires a diet to be formulated by a nutritionist, and the addition of micronutrient supplements.

Micronutrient supplementation in IBD

Cobalamin (vitamin B12)

Vitamin B12 deficiency is common in cats with chronic enteropathies. Although measuring this vitamin can help confirm gut disease, decreased values do not help differentiate between types of enteropathies, i.e. IBD and small cell lymphoma.

Cobalamin acts in two enzyme systems in cats which are involved in methyl transfer and carbon skeleton molecular rearrangements. Cobalamin is also vital for folate function. Deficiency of vitamin B12 can cause cessation of growth, weight loss, vomiting, anorexia and diarrhoea. As such, parenteral or oral supplementation can help alleviate some gastrointestinal clinical signs.[1]

Recommended dosages for B12 supplementation are:

- 250 µg subcutaneously once weekly for 6 weeks, followed by a single injection 4 weeks later
- or 250 µg by mouth once daily for 12 weeks.

Following one of these courses of supplementation, the serum B12 should be rechecked, 4 weeks after the last injection or 1 week after the last tablet. As cobalamin is a water-soluble vitamin excess amounts are excreted in the urine, so toxicity is not a concern.

Folic acid (folate)

Folate deficiency is also commonly reported in cats.[2] Adequate vitamin B12 is needed to replenish functional folate so these two deficiencies are commonly linked. Folate is needed for amino acid and nucleotide metabolism, mitochondrial protein synthesis and disposal of one-carbon units. Folate is also vital for red blood cell production. Signs of deficiency can include anaemia and a failure to thrive. Although there is no current evidence that folate supplementation improves clinical signs in gut disease, this is also a benign treatment with no reported toxicity.

Other micronutrients

Magnesium, iron, vitamin K and zinc deficiency are all possible with feline IBD. A recent study highlighted that functional iron deficiency can lead to anaemia in cats with chronic enteropathies.[3]

Microbiome modulation

Modulation of the gut microbiome shows a lot of promise as an intervention to manage chronic enteropathies in humans and animals. This includes use of faecal matter transplants, probiotic supplements, and prebiotic supplemented diets. Although an area of active research, there is currently no clear evidence of benefit of these approaches in feline gut disease.

Triaditis

Triaditis refers to the presence of concurrent cholangitis/cholangiohepatitis and pancreatitis with IBD. The inflammatory liver disease seen with IBD, is thought to be bacterial in origin due to ascending infection (via the bile duct) or from haematogenous infection (via the portal circulation). Specific nutritional modulations (e.g. protein type or amount) are usually not required to manage inflammatory liver disease. Use of antioxidants and other nutraceuticals can, however, be considered.

Pancreatitis is also commonly seen in conjunction with IBD in cats. This can cause or worsen inappetence so that placement of a feeding tube may be necessary. The cause of pancreatitis with IBD is unknown with infectious and reactive processes postulated. Unlike in dogs, nutritional factors such as the ingestion of table scraps or high fat diets, have not been implicated in pancreatitis in cats. Dietary fat restriction is not indicated in feline pancreatitis.

The nutritional goals of triaditis are to provide adequate calories (e.g. using feeding tubes if not eating) and feeding a diet focussed on the IBD (e.g. hydrolysed or novel protein diet), because pancreatitis and cholangitis/cholangiohepatitis do not require any specific nutritional modulations.

Alimentary lymphoma

Gastrointestinal lymphoma in cats can occur as both high-grade and low-grade types. High-grade alimentary lymphoma is a common form of lymphoma in cats with the gut and regional lymph nodes usually affected. Cats with this type of cancer commonly have fat and muscle wasting (cancer cachexia), which has negative prognostic implications.[4] For this reason, providing adequate nutrition to these patients (e.g. with a feeding tube) must be considered.

Low-grade small cell lymphoma is also common in cats, but with a much better prognosis compared to high-grade cancer. The clinical features of small cell lymphoma often resemble IBD. Decreased serum B12 is commonly seen and will require supplementation as discussed above. Unlike with IBD, small cell lymphoma does not require a hydrolysed or novel protein diet; however, feeding these cats a high-quality and digestible diet is recommended to improve the body condition.

Constipation and megacolon

Megacolon in cats can cause significant constipation (including possible obstipation). This usually affects middle-aged, male cats. The role of dietary fibre in this condition is often debated. Fibre sources can vary significantly regarding properties such as water solubility and bacterial fermentation. In general, insoluble fibres are thought to add bulk to faeces and increase intestinal transit times. In contrast, soluble fibres add water to the faeces (to soften the stools) and reduce transit times.

The use of nutritional therapy in early megacolon (where some colonic function is still present) is aimed at soluble fibre supplementation, alongside medical therapies (e.g. prokinetics). With more advanced disease, a highly digestible diet with lower fibre content is recommended. In the latter stages of this disease, cats are often refractory to medical and dietary therapy and require surgery (i.e. sub-total colectomy).

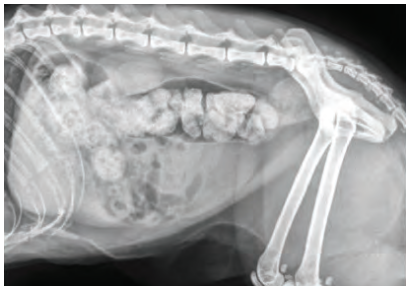

FIGURE 2: An abdominal radiograph of a cat with constipation due to decreased colonic motility.

Managing inappetence and anorexia with feline gastrointestinal disease

Reduced food consumption is a common sequel to gut disease in cats and this often leads to significant weight loss. For these reasons, proactive steps are usually needed to manage malnutrition in cats with intestinal disease.

Although supportive measures such as potassium supplemented intravenous fluid therapy are important in cats with gut disease to correct fluid, electrolyte and acid-base imbalances, these steps are unlikely to lead to sustained improvement in appetite and food consumption. Anti-emetic therapy is often not utilized in cats because vomiting is less common; however, inappetence may at least be partly due to nausea so management of this is important. Similarly, signs of abdominal pain may be more difficult to ascertain in cats and thus use of appropriate analgesia for cats with gut disease is important (especially when there is concurrent pancreatitis).

Hand feeding is often utilized to manage hospitalized anorexic cats. This is a labour-intensive process and food consumption is often limited, so the patient is unlikely to meet the nutrition targets. Similarly, the foods used for such practices (e.g. chicken, fish) are not complete and balanced diets.

The use of appetite stimulants is commonplace in feline medicine. This is usually in the form of the tricyclic medication mirtazapine. This medication has been demonstrated to have clinical benefit (e.g. weight gain) in certain chronic diseases (e.g. chronic kidney disease). Mirtazapine toxicity can also occur due to accidental overdosing; however, cats with liver disease (a common co-morbidity with gut disease) have prolonged mirtazapine half-lives compared to healthy cats.[5] For this reason, judicious use of this medication, including consideration of less frequent dosing, is recommended to prevent toxicity due to drug accumulation.

In some circumstances, placement of a feeding tube is necessary to address the anorexia associated with gut disease. This includes the presence of concurrent pathology (e.g. pancreatitis) or where there is severe gut disease causing malnutrition. An oesophagostomy feeding tube is often a safe and versatile feeding tube, which enables short- to medium-term nutritional support for these patients. The tube size (typically 14 to 19 French) enables use of many diets including liquid diets and liquidized canned diets (e.g. those designed for IBD). An oesophagostomy feeding tube also enables feeding at home.

Reflect on your reading

1. What are the nutritional goals when feeding a cat with inflammatory bowel disease?
2. True or False: Correction of vitamin B12 deficiency can improve gastrointestinal clinical signs in cats.
3. Which statement about mirtazapine in cats is correct?
   - A: Toxicity due to accidental overdosage is rare
   - B: It is a monoamine oxidase inhibitor
   - C: Mirtazapine accumulates with liver disease
   - D: There is no evidence of benefit in cats
4. What is the approach to managing cats with concurrent inflammatory bowel disease, pancreatitis, and inflammatory liver disease (i.e. triaditis)?

Answers available online in the BSAVA Library

About the author

Isuru graduated with a Bachelor of Veterinary Science from the University of Sydney in 1998. After several years working in general practice in Australia and England, he completed a combined residency in Small Animal Internal Medicine and Small Animal Nutrition at the Royal Veterinary College (London). Isuru now works at Willows Veterinary Centre and Referral Service as an American, European and RCVS recognized specialist in Small Animal Medicine and as an American Board-Certified Veterinary Nutritionist.

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