

Inflammatory Bowel Disease (IBD)

IBD is a chronic inflammatory process of the lining of the small intestinal tract. If left untreated, it can result in the buildup of scar tissue, and even potentially to lymphoma.

Pathophysiology:

- IBD is kind of a swelling of the inner lining of the small intestinal tract. Normal intestinal tract lining looks kind of like the teeth of a comb. This lining, called the mucosa and submucosa, has peaks and valleys called villi and crypts to create the maximum amount of space for absorbing and digesting nutrients from your food. The lining is composed of immune cells, connective tissue, and bacteria to aid in digestion.
- With IBD, abnormal levels of immune cells fill in the crypts, effectively decreasing the amount of area for absorption, causing the lining to look more like waves, rather than jagged peaks and valleys. There are three primary types of immune cells that can do this, which are determined by the cause of the inflammation. These are lymphocytes (and in smaller numbers, plasma cells), eosinophils, and neutrophils.

Causes:

- **Lymphoplasmacytic IBD.** This is characterized by increased levels of lymphocytes and plasma cells in the lining of the intestinal tract and does not always have a definitive cause. This can be from anything that causes a chronic inflammatory state in the intestinal tract. Some of the current thought processes are diet, stress, or secondary to chronic infection.
 - **Diet.** Cats are carnivores by nature. They are designed to eat meat, not grains. But, most commercial cat foods contain grains, which can over time, result in low grade antigenic stimulation resulting in chronic low grade inflammation. There are also thoughts that certain preservatives used in some cat foods may also contribute to chronic inflammation. While there is no proof to support either of these, we have seen some pretty radical responses of IBD to both grain free and preservative free diets in cats.
 - **Stress.** Cats are very sensitive to stress, and this includes boredom stress from being kept indoors with little stimulation. There is a documented syndrome in cats called interstitial cystitis that is an inflammation of the lining of the bladder that results from elevated stress hormones. While there is no name for this disorder in the intestinal tract, it has been shown that not only can stress cause inflammation in the bladder lining in cats, but it can also cause inflammation in other areas, including the intestinal tract.
 - **Chronic infection.** The intestinal tract is made up of a lot of different bacteria. Most of these bacteria are what we call 'good' bacteria. They aid in digestion, and help keep 'bad' bacteria in check. 'Bad' bacteria have no beneficial effect in the intestinal tract. They are opportunistic however, and if anything upsets the balance of bacteria in the intestinal tract, they can flare up and cause disease. If this happens gradually enough, we can see a lymphocytic response to the resulting inflammation.

- Idiopathic. Our favorite medical term, which means we have no idea as to the cause. That doesn't mean that there is not a cause, it just means that we don't know what it is yet.
- **Eosinophilic IBD.** This is characterized by increased levels of eosinophils in the lining of the intestinal tract. This is most often caused by food allergies or intestinal parasites.
 - **Food allergies.** Just like people can be allergic to certain food items, so can cats. As with any allergy, a cat has to be exposed to it before they can develop an allergy to it. It is not unusual to find that a cat is allergic to an ingredient that they have been eating for years, with previously no problems.
 - **Intestinal parasites.** Any intestinal parasite that is present in the intestinal tract for a prolonged period of time can result in eosinophilic inflammation. If the parasite is present for a long enough period of time, eosinophilic IBD can result, and may not be reversible once significant damage has been done.
- **Neutrophilic IBD.** This is characterized by increased levels of neutrophils in the lining of the intestinal tract. Neutrophils are a type of immune cell designed to fight bacterial infections, also known as intestinal bacterial overgrowth (IBO).
 - **IBO.** In a normal healthy intestinal tract, 90% of the bacteria present are 'good' bacteria that serve a useful purpose, and 10% are pathogenic 'bad' disease causing bacteria. In IBO this balance shifts, and the pathogenic 'bad' bacteria can reach levels up to 90%, and the 'good' bacteria are decreased to 10% of overall types. If this infection is present for a long enough period of time, enough damage happens that the inflammation can become permanent, resulting in neutrophilic IBD, and while antibiotics can temporarily suppress the 'bad' bacteria, they will return as soon as antibiotics are stopped.

Diagnosis:

- **Biopsy.** This is the gold standard for diagnosing inflammatory bowel disease, and can also help characterize the type of IBD. There are two ways to biopsy the intestinal tract – through endoscopy and by full thickness biopsy.
 - **Endoscopy.** This consists of sending a long flexible camera into your cat's intestinal tract and taking very small pieces of just the inner linings of mucosa and submucosa. While this is non-invasive, the primary problems are that since only 1 or 2 layers out of 4 layers are biopsied, it is hard to get a definitive diagnosis. In addition, the endoscope can only go so far into your cat's intestinal tract, so if the inflammation is farther down, which can happen, then the disease can be missed altogether.
 - **Full thickness biopsy.** While this is very invasive, and costly, it is the best chance of getting a 100% diagnosis for your cat. Your cat is put under full anesthesia, and an exploratory surgery is performed. During surgery we will take several full thickness biopsies from different areas of the intestinal tract and we may also take biopsies from the pancreas and liver to rule them out as causes of your cat's symptoms.
- **Blood work.** While there is not a nice easy test to diagnose IBD, there are a few tests that can lead us towards IBD, or help differentiate between the types.
 - **GI Panel.** This is a blood test that measures levels of two pancreatic enzymes, fTLI and fPLI, and two intestinal enzymes, folate and cobalamin. By looking for elevated or low levels of these, we can help pinpoint disease to either the pancreas or the intestinal tract, and confirm

intestinal disease. If the test comes back positive for intestinal disease, then we know we are on the right track. If it comes back negative, it doesn't conclusively rule it out.

- **CBC and serum chemistry.** These are part of the standard blood work that we will do on your cat as a general diagnostic tool. While these will not diagnose IBD, they can help lead us towards it by ruling out other diseases, and if we see very high levels of neutrophils, eosinophils, or lymphocytes on a CBC (complete blood count), that can help point us in the direction of the type of IBD when we have corresponding IBD symptoms.
- **X-rays.** These are non-invasive but not always easy to read. If the intestines are significantly thickened, then we can generally tell this on an x-ray. If they are only mildly thickened, then the x-ray may look completely normal.
- **Ultrasound.** It may be easier to diagnose thickened intestines using ultrasound, but if the intestines are not significantly thickened, such as early in the disease process, then the intestines may also look normal on an ultrasound.

Symptoms:

- The primary symptoms we will see with IBD are anything that relates to the intestinal tract, or in some cases, no symptoms at all until your cat suddenly starts to lose weight because of significant scar tissue built up in the intestinal tract. One thing that we have noticed with IBD symptoms is that regardless of what they are, they can commonly have a cyclical pattern. That is, your cat may vomit for a few days, then be fine for a few weeks, then vomit for a few days, and so on. Some of the more common symptoms that we see are:
 - Vomiting, usually liquid or digested food.
 - Diarrhea
 - Constipation
 - Painful defecation
 - Nausea
 - Not eating
 - Weight loss with a normal or increased appetite.
 - Eating food ravenously, but not gaining weight.
 - Thickened intestines
 - Enlarged mesenteric lymph nodes
- Not every cat that displays some of these symptoms will have IBD. There are a lot of other disease processes that can cause all of the symptoms listed above. But, most of these other disease processes can be ruled out with other tests, which can lead us towards a presumptive diagnosis of IBD.

Treatments:

- There are a variety of treatments for IBD, and much of it may depend on the type of IBD. If we have a definitive diagnosis through biopsy, that can help a lot in determining the right treatment for your cat. If we are going on a presumptive diagnosis of IBD, and blood work was not helpful in distinguishing, then we may try several milder treatments before going to the more major treatments.
 - **Steroids.** This is the gold standard for treatment of IBD. Steroids suppress the immune system, decrease the inflammation, and can make your cat hungry, which can be a big benefit if your cat is not eating well because of IBD. While short term steroids are generally fine, long

term steroids have a high rate of diabetes as a side effect, and in rare cases can cause Cushing's Disease, which can be fatal if the steroids are not stopped. Steroids are inexpensive and easy to give. They can be given as pills, liquid, injections, and ear paste.

- **Immunosuppressants.** These are commonly used in conjunction with steroids. The primary one used with IBD is chlorambucil, but cyclosporine has also been used. The primary side effects of chlorambucil and cyclosporine are anorexia, and potentially bone marrow suppression, although these are not common. Both medications must be given as an oral pill, and both are costly, but they can reduce the level of steroids needed.
- **Antibiotics.** If we suspect neutrophilic IBD, or to help combat secondary IBD from chronic IBD, we may try a course of antibiotics. The most common ones that we will use for IBD are metronidazole, amoxicillin, tylosin, and Baytril. In some cases, when neutrophilic IBD is suspected, we may keep your cat on one or more of these antibiotics for life.
- **Probiotics.** Primarily with neutrophilic IBD, but also beneficial with other types of IBD, probiotics can help restore normal digestive bacteria into the intestinal tract that have been suppressed by the pathogenic bacteria.
- **Cerenia.** This is a new kid on the block to treating IBD, but not only does it have anti-nausea and anti-vomiting effects, but it can also reduce inflammation.
- **Pepcid AC.** While this doesn't actually treat the IBD, it can reduce acid buildup in the stomach that can form in higher levels secondary to IBD, and can therefore reduce nausea.
- **Metoclopramide.** This is a drug that blocks nausea signals from reaching the brain. This has been primarily replaced in use by Cerenia, but is still used in some cases.
- **Diet.** This is a big one, especially with eosinophilic and lymphoplasmacytic IBD. There are three primary diets we will use, hypo-allergenic, grain free, and grain free with minimal preservatives.
 - **Hypo-allergenic diets.** These are prescription diets designed for cats with food allergies. There are two types, novel protein diets and hydrolyzed diets.
 - **Novel protein diets.** These are diets that do not contain any ingredients found in any over the counter foods. Since your cat cannot have an allergy to something they have never been exposed to, they cannot be allergic to anything in these diets.
 - **Hydrolyzed diets.** These diets use chicken as the meat source, but they break up the chicken in a process called hydrolyzation into such tiny particles, that they cannot physically stimulate an immune response. These diets do tend to use rice as a carbohydrate source. While rice is considered a low allergen, it is still possible, so we will usually only try these diets if your cat will not eat one of the novel protein diets.
 - **Grain free diets.** Following the thought process that cats are carnivores, and not designed to eat grains, these diets are primarily meat based, with no corn, wheat, or rice present. We will see cats with mild symptoms of IBD respond very well to these diets.
 - **Commercial raw food diets.** Since it is almost impossible to find a commercial over the counter diet that is preservative free in a dry or canned form, and since you will need to do a LOT of work and have a LOT of ingredients to make a balanced home

cooked diet, we started trying commercial raw food diets with amazing results. We have had cats with confirmed by biopsy IBD that had severe IBD and significant symptoms that had to be on very high doses of steroids just to have some quality of life. Many of these cats had a complete reversal of signs and symptoms by going to an exclusively raw food diet, and were able to either come off of all medications, or at the very least, drastically reduce their medications.

- Now, there is a lot of controversy over raw food diets and potential salmonella contamination. We have been using the only commercial raw food diet available over the counter that developed a high pressure pasteurization system to try and eliminate that risk, and as of yet, have not had any adverse problems.

Associated Diseases:

- There are a few diseases that we can see in cats that can either contribute to the cause of IBD, or can result from IBD. Diseases that can contribute to IBD are:
 - Hyperthyroidism
 - Pancreatitis
 - Liver disease
 - Helicobacter gastritis
 - Hypertension
- Diseases that can result from IBD are:
 - Pancreatitis
 - Liver disease
 - Triaditis (inflammation of the intestines, pancreas, and liver)
 - Lymphoma

While there is no cure for IBD, once it is diagnosed, we do have several treatment options that we can try to give your cat a good quality and length of life.

If you have any questions or concerns regarding any of this, please feel free to contact us at All Feline Hospital at 402-467-2711 or info@allfelinehospital.com.