



The American Ferret Association, Inc.

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INFLAMMATORY BOWEL DISEASE IN THE FERRET

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Inflammatory bowel disease (IBD) in ferrets is a chronic inflammatory disorder of the stomach and intestines. Clinical studies of greater than one hundred ferrets demonstrate that the condition is very prevalent in this species and can result in fatal complications. Two types of IBD exist: eosinophilic gastroenteritis and lymphoplasmacytic gastroenteritis. Eosinophilic gastroenteritis is severe, but uncommon. The focus of this article is on the more common form of IBD, lymphoplasmacytic gastroenteritis. Due, in part, to its subtle nature, i.e., many affected ferrets show no outward signs; veterinarians have seriously overlooked IBD in their diagnostic plan. In addition, veterinarians have misdiagnosed many IBD cases as epizootic catarrhal enteritis (ECE), *Helicobacter mustelae* infections, Aleutian Disease, and others, delaying recognition of IBD in ferrets.

CAUSES OF IBD

The simplest explanation for the cause of IBD is that something stimulates the immune system to attack the lining of the stomach and bowel, which causes long-term damage to the digestive tract. The liver is often involved with secondary inflammation (hepatitis). A more specific cause of IBD is unknown. Veterinarians think food allergy is the most common inciting agent. Other possibilities include viral or parasitic infections. On a microscopic level, the disease resembles IBD of cats, dogs, and humans. The causes of IBD in these species are a subject of debate as well.

To date, most literature on ferret digestive diseases focuses on the stomach or the bowel individually, but does not consider them together. Previous studies of the stomach tend to blame *H. mustelae* for inflammation. In recent research, extensive evaluation of histopathology samples acquired by surgical biopsy rarely reveals *H. mustelae* in ferrets with gastric disorders. *H. mustelae* simply does not appear to be the major cause of gastric disease in adult ferrets.

DIAGNOSIS

Signs

In mild cases of IBD, ferrets may not have clinical signs. Some ferrets with IBD are chronically thin, yet they may remain active; a number of ferrets may show signs of nausea, such as grinding of the teeth (bruxism) or pawing at the mouth. Surprisingly, even severely affected ferrets may exhibit no symptoms until the disease is very advanced. However, clinical signs can include inconsistent stools: firm, mucoid, liquid, greenish, or tarry. This inconsistency may be mild or wax and wane, or the ferret may have sudden episodes of severe diarrhea coupled with generalized malaise, lethargy, and weakness.

Diarrhea and nausea may be due to secondary bacterial overgrowth in the bowel as bacteria take advantage of the diseased intestines and inappropriately overgrow. Bacterial overgrowth is present in most IBD patients based on clinical signs, positive response to antibiotic therapy, and histopathology. Administration of antibiotics may cure the sudden episodes of diarrhea caused by bacterial overgrowth, but signs may reoccur later because the underlying IBD is still active.

Secondary Disease

IBD damages the stomach and bowel, sometimes severely enough to cause weight loss and poor digestion. The liver often becomes inflamed (most ferrets with hepatitis also have IBD); this inflammation may ascend the esophagus (some cases of megaesophagus seem directly linked to IBD). Inflammation can slow stomach contractions and delay gastric emptying; as a result, IBD inflicted ferrets may retain more hairballs in their stomachs compared to normal ferrets. Most importantly, IBD may be the cause of most abdominal lymphomas in ferrets. The progression of IBD to lymphoma has been well established in humans, and the disease in ferrets seems to follow a similar course. The lymph nodes surrounding the diseased stomach and bowel become inflamed and enlarged. In time, many ferrets develop lymphoma in the inflamed nodes, or in the stomach or intestinal wall. At this point, the condition is usually fatal.

Previous investigations of the bowel point to coronavirus as the cause of the inflammation. Although coronavirus can produce intestinal disease, most of the ferrets studied lived in isolated households for an average of twenty-four months and up to six years without showing clinical signs of ECE. Veterinary pathologists can use immunohistochemistry and immunoelectrophoresis on stomach and intestinal biopsy samples to rule out coronaviral infections and Aleutian Disease (a parvovirus), respectively, in confirmed IBD cases.

Blood Chemistry Screening

Clinical signs are useful in diagnosing IBD; however, many ferrets with IBD have no outward symptoms. Blood chemistry screening may reveal the disease unexpectedly during routine blood analysis, or in conjunction with a sick, suspect IBD ferret. Elevated serum Lipase (greater than 500 U/L on IDEXX commercial laboratory results) indicates gastritis in ferrets; Amylase should be normal in these cases. Elevated serum Globulin (greater than 3.0 g/dL) indicates an inflammatory response and elevated serum ALT (greater than 200 U/L) indicates hepatitis.

Experience with the IDEXX Vet Test® machine suggests that normal serum Lipase concentrations may be as high as 1000 U/L. The cause of the apparent discrepancy between the commercial laboratory results and the in-house testing has not been determined.

Biopsy

Stomach, intestinal, and lymph node biopsies can confirm IBD, including severity of the disease and the form of IBD present. A veterinarian knowledgeable in ferret surgery should obtain good biopsies via laparotomy and not with an endoscope; an endoscope-assisted biopsy results in a poor quality sample in the ferret. An experienced ferret pathologist, such as Dr. Mike Garner at Northwest ZooPath in Snohomish, Washington, must analyze the samples.

TREATMENT

Even though a definitive cause of IBD is unknown, it is a treatable disease. If food allergy appears to be causing the IBD, a hypoallergenic diet, such as Hill's Z/D® feline, may help. Anti-inflammatory drugs currently offer the best treatment. Prednisone is a corticosteroid that reduces inflammation and helps ferrets with IBD; however, it can cause side effects when used for many months. Furthermore, some ferrets do poorly on Prednisone, especially if hepatitis is present. Azathioprine (Imuran®) offers the best disease control with the fewest side effects. An initial dose of 0.3 mg/kg q 24h or 0.9 mg/kg q 48 - 72h is effective in many IBD cases. The

dose may be increased to 0.9 mg/kg qd in patients with severe or refractory signs. Once the condition is controlled, the dose of medication may be gradually tapered. Perform a CBC within three to four weeks after any increase in the Imuran dosage and every three to four months on maintenance treatment. Measure serum Lipase and Globulin concentrations to determine if the treatment is effective, and increase the dose of Imuran if needed. Treatment is usually required for life.

SUMMARY

IBD is one of the most common severe diseases seen by veterinarians who treat ferrets. It is customary to find IBD with concurrent adrenal disease, insulinoma, and/or other problems. Frequently, IBD is not outwardly impressive; therefore, diagnosis may be delayed. Affected ferrets may seem disease-free for a long time, but many of these ferrets will die of lymphoma or other complications if the IBD is not treated. Ferrets treated aggressively for their IBD can survive a long time, even when the lymph nodes are close to developing lymphoma.

¹Clinical work in collaboration with Michael Garner, DVM, DACVP

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RESOURCES

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